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FINAL OVERALL PROGRAM DESIGN FOR FLOOD RECOVERY, REHABILITATION AND PREVENTION

MARYLAND DEPARTMENT OF STATE PLANNING

JUNE, 1974

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STATE OF MARYLAND

FINAL OVERALL PROGRAM DESIGN FOR FLOOD RECOVERY, REHABILITATION AND PREVENTION

June 1974

MARYLAND DEPARTMENT OF STATE PLANNING

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Introduction

From June 14 to 23, 1972, Hurricane Agnes ravaged the State of Maryland causing approximately 243 million dollars of damage. Three and one-half months later, the State of Maryland submitted a request to the Federal Regional Council for 3.3 million dollars to aid the State and its subdivisions in flood recovery, rehabilitation and prevention planning. On September 8, 1972, Governor Mandel designated the Department of State Planning to coordinate these planning activities. In order to accomplish this task, the Flood Disaster Coordination Office was established by the Department of State Planning. This Office immediately contacted State and local governments to assess their flood recovery, rehabilitation and prevention needs. This assessment was the basis for the final overall program.

In March 1973, the Federal Regional Council approved an abbreviated $\frac{1}{2}$ million dollar program or about 15% of that requested. This program is represented in this Final Funded Overall Program Design. Since the execution of the Program in the summer of 1973, changes have occurred as a result of local government reallocation of resources to better reflect the actual needs which became clearer as the individual programs got underway. This document reflects these and other minor changes and presents the Program as it will ultimately be completed in September 1975.

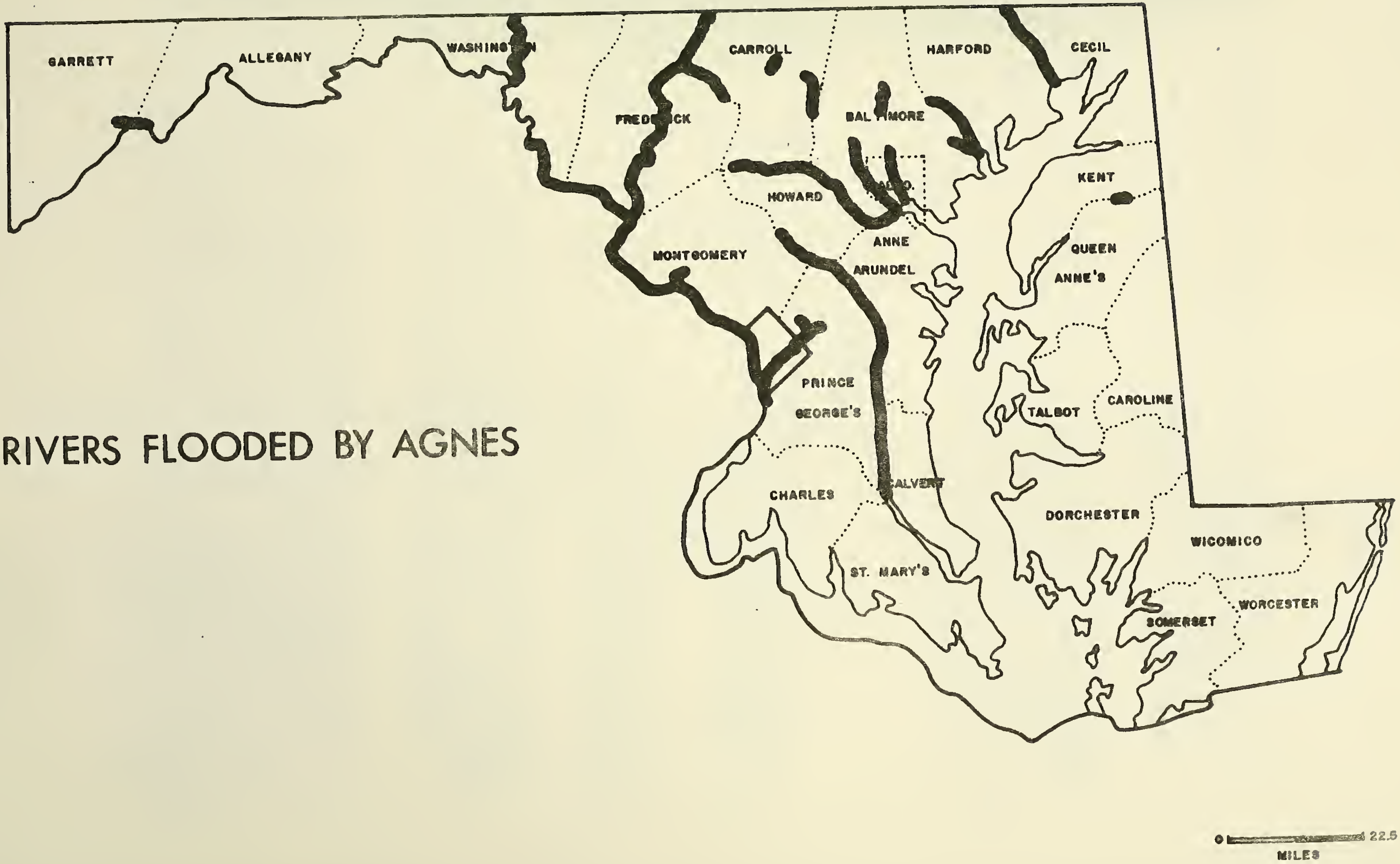
1. Record of Disaster - Hurricane Agnes

During the week of June 14 to 23, 1972, the Eastern Coast of the United States from North Carolina to New York, received one of the heaviest rainfalls in recorded history. The malefactor responsible was Hurricane Agnes, which caused over 13,500 miles of streams and rivers to flood, damaging over 3.5 million dollars of property, and accounting for 122 deaths.

As a result of this extensive damage to life and property, the Federal Government designated Baltimore City and 22 of Maryland's 23 counties as major natural disaster areas, making them immediately eligible for emergency relief funds. The most severely affected counties were Baltimore, Cecil, Frederick, Harford, Howard, Montgomery, Prince George's and Baltimore City. Additionally, the towns of Ellicott City, Elkridge and Port Deposit suffered excessive damages. The 11:55 inches at Westminster and 11:35 at Woodstock on June 21st are among the greatest one-day rainfalls in Maryland history.

The threatened collapse at three dams in the State forced the evacuation of several thousand people. Brighton Dam, on the Patuxent River at Triadelphia Reservoir was threatened by higher water and evacuation plans were prepared but not put into effect. Lake Roland Dam in Baltimore County was seriously threatened and several hundred people were evacuated for a short time. The most serious threat occurred to the Conowingo Dam on the Susquehanna River between Harford and Cecil Counties. The flow on the Susquehanna exceeded all of the past 185 years of record. Port Deposit was completely evacuated and evacuation plans were carried out to some degree in Havre de Grace and Perryville. Fortunately, the dams held under the onslaught of the raging rivers.

Major and minor streams throughout the state were heavily impacted by the incessant downpour. In addition to those already mentioned, flooding also occurred along the Anacostia as well as Seneca and Rock Creeks. Rivers where major flooding occurred are depicted on the map on the following page. The Conochocheague Creek in Western Maryland contributed its overflow to the already swollen Potomac River. At Little Falls just outside Washington, D.C., the Potomac crested at 22.01 feet in the early hours of June 24th. This was more than 12 feet over the established flood stage. Along the Monocacy River, a crest of 36.1 feet occurred at Frederick; the previously recorded high being 30 feet in 1889.



RIVERS FLOODED BY AGNES

The devastation in Ellicott City stands as vivid testimony to the flooding which occurred along the Patapsco River. It, perhaps, symbolizes the serious physical damages which have occurred to the state's resources, housing units, community facilities and services, industrial, commercial and institutional structures in and adjacent to floodplains.

The psychological impact and mental stress that was brought to bear upon flood victims cannot be overlooked. Flooding made them homeless and caused loss of personal and real properties which may never be replaced. This unmeasurable loss cannot be restored in terms of value it represented to their personal lives. The further prevention of this type of tragedy must also be addressed if the well-being of the citizens of Maryland is to be adequately protected.

DAMAGES

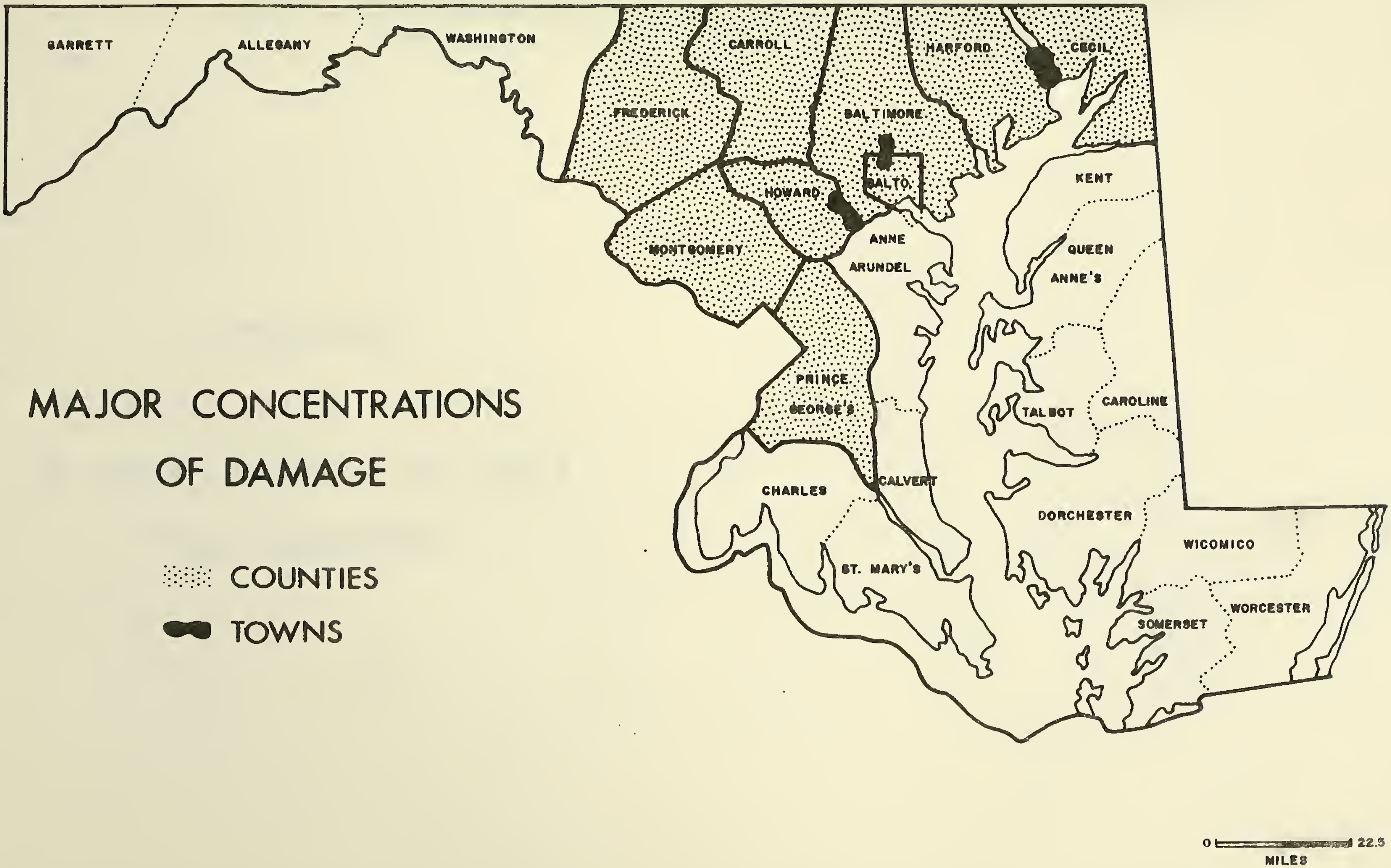
General damage estimates have been determined from the Maryland Civil Defense Agency, the Office of Emergency Preparedness, Corps of Engineers and various state and county damage surveys. A map is presented on the next page showing location of areas and places of major damage concentration.

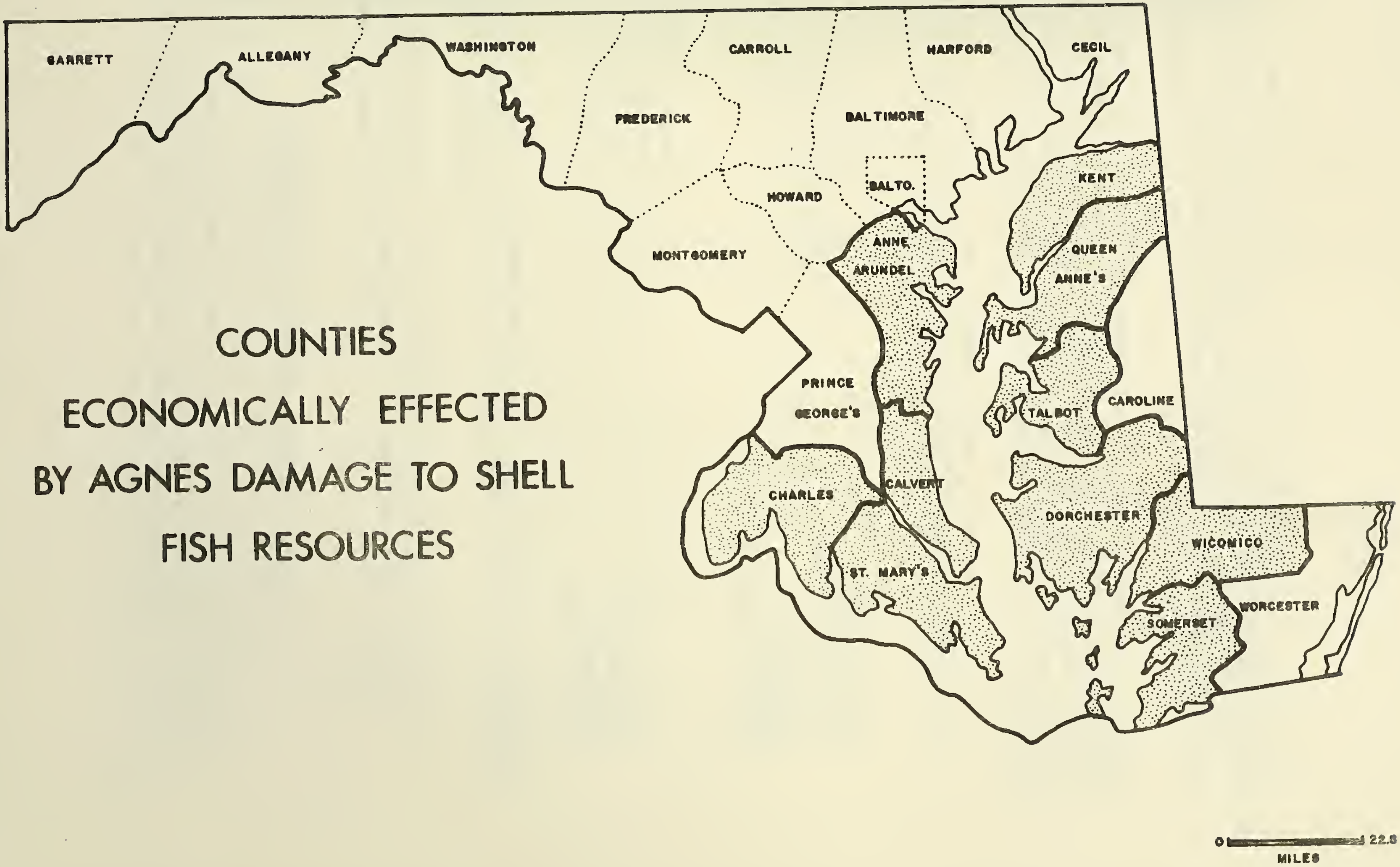
The State Highway Administration estimated damages in excess of 33 million dollars to the road system of Maryland. During the peak of the storm, as many as 27 bridges were reported collapsed or impassable due to high water conditions.

Estimation by the State Agricultural Stabilization and Conservation Service indicate that approximately 23 million dollars damage was done to Maryland's agricultural industry. Crop damage alone accounts for 15 million dollars of the total figure and will probably increase once information is gathered after the harvesting season.

One of the most dramatic impacts of tropical storm Agnes was the effect on the Chesapeake Bay and related industries. The storm caused extensive damage to the shellfish population by bringing considerable amounts of fresh water into the Bay, thus causing the death of most of the soft shell clam population. This decline in the Bay's resources directly affected the employment situation of the watermen as well as those involved in the related processing industries. The affected counties as shown on the next page are Anne Arundel, Calvert, Charles, Dorchester, Kent, Queen

MAJOR CONCENTRATIONS OF DAMAGE





COUNTIES ECONOMICALLY EFFECTED BY AGNES DAMAGE TO SHELL FISH RESOURCES

Anne's, Somerset, St. Mary's, Talbot and Wicomico. It has been estimated that in these areas, over 8,500 persons became unemployed as a result of damage to the industry caused by Agnes. This represents a more than significant impact on the economy of the State and certain counties.

Damage data on private property is more difficult to aggregate. The prime source of information comes from the Small Business Administration (SBA). SBA statistics indicate that nearly 368 displaced families applied for temporary housing out of the seven counties and Baltimore City most affected by the flooding.

A more complete overall damage assessment was issued in a report by the Civil Defense Agency dated August 7, 1972. The following is a summary of the report:

Public Property	$12,603,000
Utilities	$12,603,000
Roads and Bridges	29,000,000
Public Buildings	300,000
Other	700,000
	$42,603,000

Private Property	
Agricultural	$30,970,000
Business and Industrial	20,000,000
Residential	15,000,000
	$65,970,000

In addition, the Department of Natural Resources estimated that the economic loss caused by Agnes on Bay related industry exceeded $134,000,000.

As indicated previously, damage assessment is an ongoing process which will be coordinated through the FDCO and the programs proposed in the OPD.

GOVERNMENTAL RESPONSE (PHASES I & II)

Many levels of government had differing responsibilities during the course of the disaster and in the following period. This section attempts to assess how each responded to immediate and long-range needs which were created during Phases I and II. In some instances, programs were developed and implemented prior

to the disaster. However, most governmental actions were spontaneous in direct response to the immediate impact of Hurricane Agnes. This was more apparent in the areas of the Federal and local government responses. A closer examination of governmental action will be carried out in the ongoing process ad developed in this OPD.

Federal Response - Phase I went into effect during the course of the disaster under the aegis of the Civil Defense Agency, of the Department of Public Safety and other related organizations. Its prime objective was to save lives through rescue and population control operations.

Twenty-one persons lost their lives as a result of flooding related disasters in Maryland. The number of lives rescued is unreported but far from insignificant.

Phase II involved the restoration of essential facilities and debris clearance. Assistance was provided by Fire and Police Departments as well as Army Reserve and National Guard Units. Disaster Assistance Centers (DAC) were established in six areas to provide assistance and supplies for more immediate types of needs.

DAC's were staffed by representatives of Federal, State and local agencies which provide assistance to victims of a major disaster. Six major centers were established for nearly three weeks and several others were set up for one or two day periods in several sections of the State. Operations of the Federal agencies in the DAC were coordinated by the Office of Emergency Preparedness, an Agency of the Executive Branch of the Federal Government. Major Federal agencies represented in the DAC were:

> Housing and Urban Development: This agency provided housing to those whose homes had been destroyed or seriously damaged. Most were housed in private facilities such as motels, others were housed in public housing, and many moved into trailers provided by HUD. Most of the trailers were in two Federal installations, Bainbridge Naval Station in Cecil County and Fort Detrick in Frederick County. A few were in commercial trailer parks, for which the State payed the rent. As of September 22nd, there were 284 disaster victims given housing.

Small Business Administration: This Agency provided loans to property owners, family and business, who suffered damage as a result of the flood. As of March 2, 1973, 3,491 applications for home rehabilitation had been approved, totaling $12,597,571. Applications for business loans approved are 791 for an amount of $17,467,738.

The Farmers Home Administration: This Agency made loans to disaster victims in rural areas. Terms are essentially the same as SBA loans. Loans approved totaled $2,101,060 as of January 31, 1973.

Internal Revenue Service: This Agency advised disaster victims regarding income tax rebates which may be granted as a result of flood damage.

Corps of Engineers: Upon request, this Agency performs floodplain information studies for local governments. Under the Corps program in Maryland, ten reports in four counties have been completed and are being used as guides to development; and fifteen reports in four counties have been authorized.

In addition, the Corps of Engineers has been extensively involved in cleanup and restoration and removal of debris of essential facilities.

The Federal Highway Administration working with OEP provided special assistance funds for all damaged Federally aided highways.

The Department of Agriculture provided essential assistance to rural residents and farmers through direct emergency funding representing $315,000 for temporary grazing and emergency conservation measures.

State Response - All of the functional departments of State Government reacted either directly or indirectly to the disaster.

The State Highway Administration forces with the aid of various Federal and other State and County agencies worked together as a team to get the main highways and bridges repaired as soon as possible. Bailey Bridges, erected by the U.S. Army personnel, were utilized at

locations. Temporary repairs were made to roadways that had been damaged and traffic throughout the State was again moving at a semi-normal degree within 3 to 5 days after the storm.

The State Highway Administration's main arterial systems were not affected as much by the storm as were the various County Systems. Contracts have been awarded and in many cases completed to replace and/or repair damaged roadway and bridges in order to return the systems back to normal operations.

The Department of General Services advised all Secretariats and Department Heads of rules and regulations covering procedures to obtain emergency funds from the Office of Emergency Preparedness. Necessary architectural-engineering help for correction of damage was also made available to other agencies.

More short-range technical assistance became available through the Department of Economic and Community Development (DECD). On September 18, 1972, DECD received approval of a $125,000 Technical Assistance grant from the Economic Development Administration. Under this grant, staff and consultant services were made available to assist communities in identifying problems created by the floods, determining the extent of damages, developing alternative development proposals for local governments to review, including analysis of impact, costs and development, and to assist in identifying and delivering resources for reconstruction which will be made available through emergency disaster relief funds and regular Federal and State programs.

The Department of Natural Resources initiated two programs as a direct result of Agnes affecting the Chesapeake Bay's seafood industry. One program requested funds to survey Maryland soft claim industry. Another project proposal sought to restore the shellfish industry particularly oysters to its former high level of productivity. These proposals were a direct and immediate response to the economic hardships created as a result of the intense rains and flooding.

The economic impact was also addressed in a proposal by the Chesapeake Biological Laboratory, Natural Resources Institute of the University of Maryland. Its focus is the development of methods and facilities to rehabilitate stocks destroyed by Hurricane Agnes in the Chesapeake Bay. The need for coordination of these types of efforts becomes apparent in examining how various agencies reacted to the disaster.

Local Response - County and municipal responsibilities under Phase I and Phase II related to rescue operations, restoration of transportation lines and essential facilities, and debris clearance. Local fire and police departments responded to these more immediate tasks.

County Social Service Departments issued food stamps at no cost to those in need. Emergency funds were applied for by many local Office of Equal Opportunity organizations to provide emergency food and medical services to low income residents of affected areas.

County assessors lent their support to the Federal SBA by assisting in their field investigations.

Several jurisdictions had begun to address the problem of floodplain and stormwater management before Agnes struck. The Maryland-National Capital Park and Planning Commission (MNCPPC) had prepared a stormwater management program study in the Anacostia River Basin which is partially in Prince George's County. This longer range type of planning for the prevention of flood damage is one of the main activities envisioned in the final stage, Phase III.

PHASE III ACTIVITIES (FOPD)

Phase III is concerned with pre-disaster mitigation and post-disaster planning, here described as long-range recovery, rehabilitation and flood prevention planning. Related federal activities are being coordinated through the Regional Council. Members of the Regional Council Task Force include representatives of these federal departments and agencies: Labor; Health, Education and Welfare; Transportation; Environmental Protection; Housing and Urban Development; Appalachian Regional Commission; Army Corps

of Engineers; Economic Development Administration; Office of Emergency Preparedness; Small Business Administration; and Agriculture.

Governor Mandel designated the Department of State Planning (DSP) to coordinate all planning activities in Maryland. In order to accomplish this task, a Flood Disaster Coordination Office (FDCO) was established by the DSP in the Baltimore State Office Building, Room 809, 301 W. Preston Street, Baltimore, Maryland 21201.

Federal funds for flood disaster recovery planning were disbursed through the FDCO. All State agencies involved in reconstruction planning efforts assigned liaison persons to give assistance in the high priority of this office. The role and program activities of the FDCO are spelled out in this document.

The primary function of the Flood Disaster Coordination Office is the coordination of all levels of governmental activity which address the goals as developed in this program. Many administrative areas exist in which a spirit of cooperation can achieve more productive results both in planning activities and ultimate implementation. Disasters occur at the whim and fancy of Nature. Who in Maryland can deny its severity and impact on lives? It is with the utmost haste as well as with a cooperative mode of response that we must proceed to plan for the prevention of such occurrence in the future.

II. Overall Program Design

This Overall Program Design presents only a portion of the flood recovery, rehabilitation and prevention needs of Maryland government and planning organizations. The next six pages summarize these needs. The OPD briefly describes the process through which programs were selected and the ultimate program design was developed. The preparation of this OPD was required by the Federal Regional Council for program and project funding under augmented planning funds from EDA, HUD, and ARC. As evidenced by the document, the State of Maryland will carry out the program by evaluating problems, determining needs and opportunities, defining potential involvements and responsibilities of all agencies and governments within the State as well as indicating and defining program responses.

This document reflects the active and responsible action of the State government and its agencies, county and local govern-

MARYLAND'S FLOOD RECOVERY, REHABILITATIVE AND PREVENTIVE NEEDS

AGENCY OR JURISDICTION	REQUESTED	RECEIVED	BALANCE	ORIGINAL PROGRAM OBJECTIVES
Balto. City	$1,287,750	$ 55,000	$1,232,750	1. Delineation of floodplains *2. Storm water management plan *3. Land use analysis *4. Relocation and reuse for developed areas 5. Stream improvement/flood control 6. Public participation
Balto. County	$ 79,820	$ 25,000	$ 54,820	1. Delineation of floodplains 2. Develop a system for evaluating development impact on floodplains 3. Storm water management plan 4. Review of regulations governing flood control & storm water management
Calvert County	$ 40,000	-0-	$ 40,000	1. Delineation of floodplains 2. Storm water management plan 3. Bay shore erosion control plan 4. Review & revision of county regulation 5. Elicit Federal & State aid
Carroll County	$ 100,000	-0-	$ 100,000	1. Delineation of floodplains 2. Study feasibility of rezoning floodplains to conservation district 3. Elicit Federal & State aid 4. Expedite watershed development programs (studies)

*Objectives receiving attention under current funding.

AGENCY OR JURISDICTION	REQUESTED	RECEIVED	BALANCE	ORIGINAL PROGRAM OBJECTIVES
Cecil County	$ 75,000	$ 30,000	$ 45,000	*1. Evaluate flood protection measures for Port Deposit 2. Floodplain & surface water management study for Elk Creek watershed
Frederick County	$ 46,000	-0-	$ 46,000	1. Floodplain delineation 2. Study floodplain regulatory measures 3. Analyze impact of floodplain development 4. Using above results, alter comprehensive development plan 5. Prepare county flood emergency preparedness plan
Harford County	$ 55,000	-0-	$ 55,000	1. Floodplain & surface water management 2. Floodplain delineation 3. Review and propose regulatory controls of floodplains
Howard County	$ 65,000	$ 21,000	$ 44,000	1. Rehabilitate or replace damaged or destroyed housing 2. Achieve rehabilitation & revitalization of heavily damaged communities *3. Develop plans & programs for flood protection, abatement and emergency evacuation

*Objectives receiving attention under current funding

AGENCY OR JURISDICTION	REQUESTED	RECEIVED	BALANCE	ORIGINAL PROGRAM OBJECTIVES
Montgomery Co.	$ 194,000	-0-	$ 194,000	*1. Comprehensive stormwater management plan 2. Develop programs to model water movement by basin 3. Define maintenance & operational systems 4. Define feasible political & financial structure for administering programs 5. Define water quality improvement factors
Washington Co.	$ 145,000	-0-	$ 145,000	1. Storm damage management plan 2. Establish priority needs for storm drainage improvements & flood control projects 3. Delineate floodplains 4. Prepare uniform storm drainage design criteria
DECD	$ 248,000	$ 128,000	$ 120,000	*1. Study ways to reduce impact of flooding disaster in the future while taking care of rehabilitation & relocation problems faced by flood victims *2. Establish economic development recovery plan

*Objectives receiving attention under current funding

DECD - Department of Economic and Community Development

AGENCY OR JURISDICTION	REQUESTED	RECEIVED	BALANCE	ORIGINAL PROGRAM OBJECTIVES
DESS	$ 133,000	$ 160,000 (of other funds)	-0-	*1. Provide disaster unemployment assistance and unemployment insurance benefits to unemployed individuals as they become unemployed or at the end of the first week of enemployment *2. Provide employment opportunities or training to those unemployed as a result of Agnes (particularly Bay dependent livelihoods) until recovery *3. Prepare comprehensive plan & guidelines to direct services & resources of DESS in any future emergency or disaster *4. Prepare program whereby DESS would be responsible for eliciting Federally subsidized manpower for past disaster clean-up effort
DNR	$ 586,800	$ 60,000	$ 526,800	*1. Evaluate Federal, State & Local floodplain regulations 2. Maximize open space & recreational use of floodplains *3. Discourage dredging, filling or otherwise alteration of floodplain 4. Delineate floodplains *5. Delineate & manage stormwater drainage areas

*Objectives receiving attention under current funding

DESS - Department of Employment and Social Service
DNR - Department of Natural Resources

AGENCY OR JURISDICTION	REQUESTED	RECEIVED	BALANCE	ORIGINAL PROGRAM OBJECTIVES
DSP-FDCO	$ 108,600	$ 77,000	$ 31,600	*1. Promote & assist in process utilizing existing governmental organizations to effectively deal with flood problems *2. Encourage & develop an efficient system for collection, evaluation, coordination & dissemination of flood recovery rehabilitation & prevention information *3. Encourage & direct Federal policies & programs to optimize their effectiveness in light of Maryland's needs *4. Redirect & help develop flood prevention planning at all levels
DSP-CSP	$ 35,700	$ 13,000	$ 22,700	*1. Develop a system to interpret natural soil groupings into data more readily accepted and assimilated into ongoing planning & development activities, ie., frequency of flooding as related to alluvial deposits
DOT	$ 85,000	-0-	$ 85,000	1. Provide for safe, expeditious movement of both personal & material during emergencies 2. Improve structurally those elements of the highway system to avoid & lessen impact such as was experienced during Hurricane Agnes

*Objectives receiving attention under current funding

DSP - Department of State Planning
FDCO - Flood Disaster Coordination Office
CSP - Comprehensive State Planning Section
DOT - Department of Transportation

AGENCY OR JURISDICTION	REQUESTED	RECEIVED	BALANCE	ORIGINAL PROGRAM OBJECTIVES
TCCW MD.		$ 28,000		See page 73; Program objectives developed in cooperation with FDCO in order to redirect resources for recovery activity.
SRBC		$ 6,000		See page 89; Program objectives developed in cooperation with FDCO in order to redirect resources for recovery activity.
MNCPPC		$ 7,000		See page 59; Program objectives developed in cooperation with FDCO in order to redirect resources for recovery activity.
TOTALS	$3,284,670	$450,000	$2,742,670	

TCCW MD. - Tri-County Council for Western Maryland, Inc.
SRBC - Susquehanna River Basin Commission
MNNCPPC - Maryland National Capital Park and Planning Commission

ments and related planning agencies. It has been prepared by the staff of the Flood Disaster Coordination Office to respond to the needs of our citizens affected by Agnes and to address the program's goals.

The overall program design for flood recovery, rehabilitation and prevention planning provides the State of Maryland with a general organizational plan to begin to develop roles for the various State and local administrative agencies in the area of flood prevention. These roles will develop in ways varying from the development of more stringent "police power" protection to providing guidance to local communities in meeting their short-range flood prevention planning needs.

The OPD delineates the responsibilities of different levels of government and inter-relates their programs and work activities into a concerted effort. Through this process, all participants will be more readily informed of the full range of each governmental agency involvement and therefore able to contribute more extensively.

In addition, the document enables the State as a whole to manage its resources and activities to achieve stated goals. Gaps and duplications of effort have been prevented. Program goals and objectives have been stated. Time frames and costs have been made explicit. The effort can be evaluated and adjusted.

The following sections of this document present a detailed outline of the process and organization used in developing this OPD, an outline of program commitments, manpower requirements, as well as cost and scheduling estimates.

PROGRAM PREPARATION

The pre-eminent goal of the State of Maryland and, therefore, the FDCO program can be succinctly stated as a desire to utilize in an expeditious yet efficient manner all available resources to initiate continuing programs for flood recovery and rehabilitation, flood prevention planning.

The organization developed to carry out Maryland's long-range planning efforts encompasses the horizontal and vertical governmental and planning structure in the State. It has been streamlined as much as possible by the designation of individuals

as contact points with full responsibility for the group or government they represent. The involved bodies and the linkages are defined in the chart on the next page, entitled "Organization for OPD Preparation."

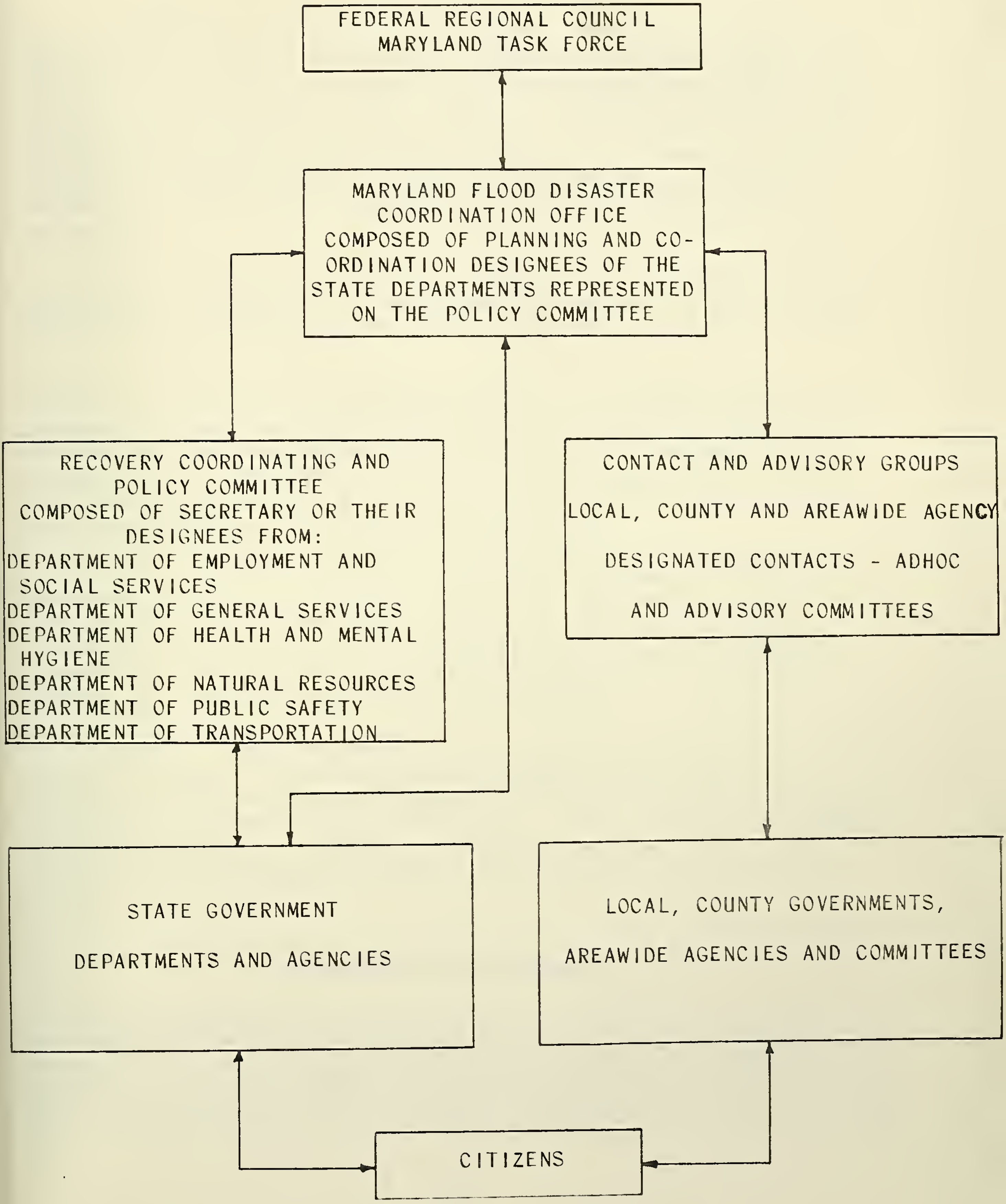
The method by which the Maryland OPD was developed is a rather simple straight-forward planning process. The Department of State Planning, as designated by Governor Mandel to coordinate and manage the program, initiated the process in the State through meetings with the Recovery Coordination and Policy Committee and federal, county, local and areawide officials. These meetings provided an introduction and information to all who were involved in the task. As a result of these meetings, local, county and areawide contact advisors were established and individuals were designated by State departments to work in the Flood Disaster Coordination Office.

Initial damage assessment reports and information were forthcoming from all levels of government in the State, as well as the Federal Government. Broad goals were formulated from this information and statements of leaders and citizens. This initial identification of problems and opportunities was further solidified by ongoing contacts of the FDCO with the Statewide contact advisors. Gaps in information on problems, needs and opportunities were identified.

Under the President's Disaster Relief Program, a total of $5 million was allocated by HUD, EDA and ARC for the northeast disaster areas damaged by Agnes. The State was aware that Maryland's allocation was 10% of that amount ($500,000). Nevertheless, it was felt that the best course of action was to call for proposals to best meet the total recovery, rehabilitation and planning needs of the state.

The Flood Disaster Coordination Office asked State functional departments and local planning agencies in the State to respond to the problem by preparing and submitting a list of their respective needs in a program format to accommodate the Agnes recovery, rehabilitation and prevention goals. An analysis of these needs provided insight into ways of redirecting plans and programs through the discovery of apparent gaps and overlaps in present and proposed programs. On the basis of this, all departments and agencies were encouraged to review their programs.

ORGANIZATION FOR OPD PREPARATION


FEDERAL REGIONAL COUNCIL MARYLAND TASK FORCE
MARYLAND FLOOD DISASTER COORDINATION OFFICE COMPOSED OF PLANNING AND COORDINATION DESIGNEES OF THE STATE DEPARTMENTS REPRESENTED ON THE POLICY COMMITTEE
RECOVERY COORDINATING AND POLICY COMMITTEE COMPOSED OF SECRETARY OR THEIR DESIGNEES FROM:
DEPARTMENT OF EMPLOYMENT AND SOCIAL SERVICES
DEPARTMENT OF GENERAL SERVICES
DEPARTMENT OF HEALTH AND MENTAL HYGIENE
DEPARTMENT OF NATURAL RESOURCES
DEPARTMENT OF PUBLIC SAFETY
DEPARTMENT OF TRANSPORTATION
CONTACT AND ADVISORY GROUPS
LOCAL, COUNTY AND AREAWIDE AGENCY
DESIGNATED CONTACTS - ADHOC AND ADVISORY COMMITTEES
STATE GOVERNMENT DEPARTMENTS AND AGENCIES
LOCAL, COUNTY GOVERNMENTS, AREAWIDE AGENCIES AND COMMITTEES
CITIZENS

Program proposals were submitted to the FDCO through the appropriate contact individuals. Working with these submitting individuals, staff members of the FDCO reviewed the proposals to identify duplication of effort, maximize the effects and clarify the objectives and measurable outputs. The first draft Overall Program Design submitted to FRC on October 13, 1972 revealed Maryland's flood recovery needs as requiring $3.3 million. A summary of these needs is presented on pages twelve through seventeen.

Upon receipt of the original OPD, FRC attempted to raise Maryland's allocation, but was unable to do so. Thus it became necessary to rescope the OPD to the $500,000 amount.

In meetings with the State Recovery Coordination and Policy Committee and FRC, it was decided that all floodplain delineation proposals except the state-wide proposal of the Department of Natural Resources would be deleted from the final OPD. Their program was to accelerate delineation activities and to develop a program to assist political jurisdictions in the development and implementation of floodplain management.

With the deletion of the delineation proposals, there remained $1.8 million requests. FDCO with guidance from its advisory groups selected the proposals to be funded. Many worthwhile projects were not accommodated within the $500,000 available. FRC agreed to help the State look for alternative methods of funding these worthwhile projects.

This OPD, then, represents only a small portion of the total Maryland program. FDCO actually has three activities it is coordinating under the Agnes effort. One program deals with the proposals contained in this submission. The second program deals with those residual projects not herein contained. The third program deals with coordination of the floodplain delineation effort.

MANAGEMENT AND EVALUATION

The management and evaluation of the Statewide program will generally follow the same procedure as used with local 701 assistance which is now administered by the Department of State Planning. This will allow for the easy integration of management and evaluation activities into ongoing programs.

The system of evaluation is based on three distinct types of activity.

1. Assessments as to progress towards rebuilding and repairing facilities, support and service systems to a pre-Agnes level.

2. Assessments as to progress of planning programs as is delineated and measurable through funding, work item schedules, measurable outputs and objectives.

3. Assessments as to the progress of implementation of planning recommendations and criteria and standards developed through the delivery of action projects, services and products.

The Flood Disaster Coordination Office will develop guidelines for the administration of planning assistance funds for the Agnes Flood Recovery, Rehabilitation and Prevention. These guidelines will be prepared under the policy direction of the participating Federal funding agencies.

The FDCO will monitor and evaluate the progress of each recipient on a continuing basis. Some of the items to be reviewed include:

1. Quality of work performed.

2. Ability of staff or consultants to maintain the schedule and content of agreed upon work program.

3. Efforts made to coordinate work program with other planning activities of all levels of government.

Flood Disaster Coordination Office Program

Goal: To encourage all levels of government in the State of Maryland to plan for the alleviation of flooding problems through a coordinated effort.

Key Issues, Problems and Opportunities

Governor Mandel and the Federal Government recognized the need for a coordinated and well managed program of long-range planning necessary for the recovery, rehabilitation and prevention from

flooding disasters. Based upon this recognition, a coordinated management program is needed to alert the citizenry to potential flooding situations to protect and effectively rehabilitate if necessary the flood area, and most importantly to reduce flood hazards through proper planning and implementation. The Governor has directed that the Flood Disaster Coordination Office continue the coordination of activities related to the prevention of flooding.

An important and necessary requirement of any program is to redirect and impact public and private ongoing processes. A coordinated and publicized plan in a statewide program must permeate all levels of government. Existing planning and programming activities of functional state departments and regional and local agencies are fundamentally interconnected and provide opportunities to coordinate and manage planning and programming to achieve maximum benefits from utilizable resources. A coordinated planning operation is both horizontal and vertical in linkage. It cuts across functional state department lines and through the hierarchy of governments; insuring action directed towards commonly held goals while reducing conflicts and duplications and filling gaps. Both the horizontal and vertical linkages provide feedback of specific conditions, trends, planning and programming gaps, local area desires and concerns.

The structures must allow for the integration of flood recovery, rehabilitation and prevention planning activities into ongoing state comprehensive, and functional planning and area-wide and local planning activities which will additionally serve to strengthen the overall capability of these agencies and governments. A major responsibility of the Flood Disaster Coordination Office is that of guiding and monitoring the work of the many participants in this planning process.

The program of the Flood Disaster Coordination Office was originally conceived to operate on and within a larger scaled fundable program. The miniscule funds available and directly applicable to flood problems which funnel through the FDCO have caused drastic changes in the basic operations and strategies available to deal with flood problems in the State of Maryland.

The Federal Regional Council (FRC) required the state to develop a long-range program to plan for recovery, rehabilitation, and prevention of flooding problems as a basis for Federal funding. The work program of the Flood Disaster Coordination Office directs

itself to three program areas or components: the Fundable component, the Residual component (including uninitiated or unstructured programs), and the Floodplain and Water Management component which are also the components of the Overall Program Design.

The Fundable component represents the priority work areas, and where supplementary funding is required to initiate or increase activities. Specifically, the FDCO must monitor the funded activities constantly evaluating their direction, technique and progress. Any useful information generated must be made available to parties to whom it may be of benefit. During this process the FDCO should identify and elucidate other activities which may be of value to the program agency and its benefactors.

The Residual component identifies activities for which resources will be sought from other sources. Initially strategies for identifying and mobilizing resources to initiate these activities will be developed by the FDCO. When these are undertaken they must also be monitored and coordinated providing guidance where necessary. The evolution of this component is contingent upon not only identifying and organizing a management structure but also its ability to continue.

The Floodplain and Water Management component is a strategy for coalescing and energizing the activities and the legislative responsibilities of state departments and local governments. FDCO will act as a catalyst and provide coordination and direction in times of confusion and controversy; and will deal with both floodplains and water in order to effectively reduce flood problems. Working with the primary state agencies (DSP, DNR, and DHMH) FDCO will stress a system of regulation and management which will reduce or at least maintain flood hazards at the present level.

The four objectives and related work programs that follow can be applied to all three areas of the Overall Program Design: the funded program; residual program; and floodplain and water management program.

Objectives and Related Work Elements

I. Promote and assist in a process utilizing existing governmental organizations to effectively deal with flooding problems.

    a. Develop working relationship with state and local agencies that affect flood problems.

b. Assess existing problems, ideas and methods for their correction and redirection.
c. Coordinate state, regional and local efforts to stress cooperation and avoid duplication.
d. Administer the funded program component.
e. Provide for effective citizen and local organization participation.
f. Provide or coordinate technical assistance.
g. Identify areas of economic and technical assistance.

2. Encourage and develop an efficient system for the collection, evaluation, coordination and dissemination of Flood Prevention, Recovery and Rehabilitation information.

a. Document regulations and ongoing studies and programs of federal, state and local governmental agencies.
b. Review ordinances and building codes.
c. Work closely with the Maryland Civil Defnese in its preparation of an early warning and protection system.
d. Assemble and keep abreast of storm water and flood management technology, regulations, etc.
e. Publish newsletter to local and state agencies providing national and local law, regulation, new technology and ideas.

3. Encourage and direct Federal Policies and Programs to optimize their effectiveness in light of Maryland's needs.

a. Maintain continued liaison with the Federal Regional Council.
b. Actively review and comment on applications and notices and expedite through A-95 review process.
c. Problem areas will be identified and analyzed with regard to effect on overall program and appropriate changes in recommended.
d. Assist state, regional and local governments in conforming to Federal policies and requirements.
e. Promote the allocation of federal resources and programs to Maryland.

4. Redirect and help develop flood prevention planning efforts at all levels.

a. Impact ongoing system toward cooperative governmental, private and public involvement.

b. Work closely with DNR in their development of a statewide floodplain and water management program.
c. Guide all activities so they support a continuing management program.
d. Mobilize all available resources.
e. Promote the study of existing practices.

DEPARTMENT OF STATE PLANNING - FLOOD DISASTER COORDINATION OFFICE

OBJECTIVES AND RELATED WORK ELEMENTS	END PRODUCT	DURATION	PROGRAM COST
1. Promote and assist in process utilizing existing governmental organizations to effectively deal with flood problems.		1. 27 mos.	HUD-$12,300 EDA- 13,650 ARC- 3,500 MD- 9,826 DSP- 6,650
a. Develop working relationship with state and local agencies that affect flood problems	Effect an ongoing flood waters management program at all levels of government.	a. 21 mos.	
b. Assess existing problems, ideas and methods for their correction and redirection.	Ongoing direction of assessing problems and defining solutions.	b. 6 mos.	
c. Coordinate state, regional and local efforts to stress cooperation and avoid duplication.	An efficient interworking management approach to flood prevention planning.	c. 21 mos.	
d. Administer the funded program component.	Integration of programs into planning and management programs.	d. 27 mos.	
e. Help initiate effective citizen and local organization participation.	Local understanding of flooding problems and cures.	e. 5 mos.	
f. Provide or coordinate technical assistance.	Workable plans and programs.	f. 18 mos.	
g. Identify areas of economic and technical assistance.	Ongoing process of searching for program assistance.	g. 8 mos.	

Flood Disaster Coordination Office (Cont.)

OBJECTIVES AND RELATED WORK ELEMENTS	END PRODUCT	DURATION	PROGRAM COST
2. Encourage and develop an efficient system for the collection, evaluation, coordination and dissemination of Flood Recovery, Rehabilitation and Prevention information.		2. 24 mos.	HUD-$ 9,500 EDA- 11,750 ARC- 2,500 MD- 7,018 DSP- 4,750
a. Document regulations and ongoing studies and programs of federal, state and local governmental agencies.	Publication of studies, assistance programs, etc.	a. 6 mos.	
b. Review ordinances and building codes.	Publication of ordinances and codes with comment.	b. 4 mos.	
c. Work closely with the Maryland Civil Defense Agency in its preparation of an early warning and protection system.	A system which incorporates the ability to deal with all flooding emergencies.	c. 3 mos.	
d. Assemble and keep abreast of storm water and flood management technology, regulations, etc.	Provide ongoing technical assistance.	d. 24 mos.	
e. Publish newsletter to local and state agencies providing national and local law, regulation, new technology and idea.	Coordination and understanding of flood preventive measures.	e. 21 mos.	
3. Encourage and direct Federal Policies and Programs to optimize their effectiveness in light of Maryland's needs.		3. 24 mos.	HUD-$ 9,500 EDA- 11,750 ARC- 2,500 MD- 7,018 DSP- 4,750

Flood Disaster Coordination Office (Cont.)

OBJECTIVES AND RELATED WORK ELEMENTS	END PRODUCT	DURATION	PROGRAM COST
a. Maintain continued liaison with the Federal Regional Council.	Continued cooperative coordination.	a. 24 mos.	
b. Actively review and comment on applications and notices and expedite through A-95 review process.	Guide programs to include flood prevention in their planning and implementation.	b. 21 mos.	
c. Problem areas will be identified and analyzed as to their effect on overall program and appropriate changes will be recommended.	An ongoing priority program will be prepared and used to direct local efforts.	c. 16 mos.	
d. Assist state, regional and local governments in conforming to Federal policies and requirements.	A continuing cooperative and efficient flood management program.	d. 24 mos.	
e. Promote the allocation of Federal resources and programs to Maryland.	Evaluation of state problems and advocate Federal assistance.	e. 20 mos.	
4. Redirect and help develop flood prevention planning efforts at all levels.		4. 27 mos.	HUD-$38,000 EDA- 32,500 ARC- 1,500 MD- 28,075 DSP- 19,000
a. Impact ongoing system toward cooperative governmental, private and public involvement.	Integration of FDCO activities into ongoing programs	a. 12 mos.	
b. Work closely with DNR in their development of a statewide floodplain and water management program.	Ongoing cooperation.	b. 20 mos.	
c. Guide all activities so they support a continuing management program.	Integration of FDCO activities into ongoing programs.	c. 21 mos.	

SUMMARY BUDGET

Jurisdictions	Federal Funds Requested
Baltimore City	$ 55,000
Baltimore County	25,000
Cecil County	30,000
Howard County	21,000
Maryland National Capital Park and Planning Commission (MNCPPC)	7,000
Tri-County Council for Western Maryland, Inc.	28,000
Jurisdiction Subtotal	$166,000

State Departments and Others	
Department of Economic and Community Development	$118,000
Department of Natural Resources	60,000
Department of State Planning	
Flood Disaster Coordination Office	87,000
Comprehensive State Planning	13,000
Susquehanna River Basin Commission	6,000
State Departments Subtotal	$284,000
Subtotal	450,000
*Previously Advanced	50,000
Total	$500,000

*In response to an application of August 31, 1972, a check for $50,000 was delivered to Governor Mandel on September 13, 1972. This Comprehensive Planning Grant, CPA-MD-03-06-1006, was issued on behalf of the Federal Regional Council by HUD. The $50,000 was used to establish the Flood Disaster Coordination Office and to prepare this document.

FDCO BUDGET

	HUD	HUD	EDA	ARC	STATE	TOTAL	TOTAL HUD
	9/1/72-6/30/73	6/30/73-12/31/74					
Staff	$40,807	$28,764	$31,796	$ 7,509	$22,164	$131,040	$69,571
Fringe Benefits	3,240	4,142	4,391	1,172	3,182	16,127	7,382
Travel	100	1,032	814	372	782	3,100	1,132
Office Expenses	3,465	1,294	2,036	435	985	8,215	4,759
Communication and Postage	1,110	758	588	322	552	3,330	1,868
Reproduction	240	525	375	190	410	1,740	765
Project Inspection Fee	572	485				1,057	1,057
	$49,534	$37,000	$40,000	$10,000	$28,075	$164,609	$86,534

*Does not include matching funds for HUD for 9/1/72-6/30/73.

BREAKDOWN OF HUD GRANT FOR FDCO ACTIVITIES

	HUD 9/1/72-6/30/73	HUD 6/30/73-12/31/74	HUD TOTAL	STATE MATCH	TOTAL
Staff	$40,807	$28,764	$69,571	$34,785	$104,356
Fringe Benefits	3,240	4,142	7,382	3,691	11,073
Travel	100	1,032	1,132	566	1,698
Office Expenses	3,465	1,294	4,759	2,379	7,138
Communication and Postage	1,110	758	1,868	934	2,802
Reproduction	240	525	765	383	1,148
Project Inspection Fee	572	485	1,057		1,057
TOTAL	$49,534	$37,000	$86,534	$42,738	$129,272

Amendatory Application

Form Approved
OMB N -R0895

U.S. DE TMENT OF HOUSING AND URBAN DEVELOPMENT
COMPREHENSIVE PLANNING ASSISTANCE PROGRAM

ANNUAL GRANT BUDGET

2. PROJEC . IBER *(If known)* CDA-MD-03-06-1006

3. BUDGET NUMBER

4. DATES OF PREVIOUS BUDGET APPROVALS *(Complete only if this is a revised budget)*

BUDGET NO. 1. ____________, 19__ APPROVED BUDGET *(No.____)*, ____________, 19__

1. NAME, ADDRESS AND ZIP CODE OF APPLICANT *(Include County)*

State of Maryland, acting by and through
Department of State Planning
301 W. Preston Street
Baltimore, Maryland 21201

5. FEDERAL SHARE BASIS

☒ 2/3 ☐ 3/4
☐ COMBINED

6. PROJECT FUNDS	REQUESTED	APPROVED
ALLOCATION OF FEDERAL GRANT FUNDS	200,000	
NON-FEDERAL FUNDS TO BE PROVIDED	100,000	
ESTIMATED COST OF PROJECT	300,000	

7. NATURE OF REVISION

☐ PROJECT PERIOD
☐ PROJECT COST
☐ SCOPE OF WORK

8. PROJECT PERIOD	REQUESTED	APPROVED
FROM	09-01-72	
TO	12-31-74	

9. LINE NO.	ALLOCATION CATEGORY	STAFF SALARIES	SERVICES BY OTHER PUBLIC AGENCIES	CONSULTANT SERVICES	OVERHEAD COSTS	SUB-TOTAL	PROJECT INSPECTION FEE	TOTAL	AMOUNT APPROVED
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
1.	Statewide	104,356	170,093		23,859	298,308	1,692	300,000	
2.	Metropolitan								
3.	City								
4.	Local Assistance								
5.	Non-Metropolitan								
6.	Other *(Specify)*								
7.									
8.									
9.									
10.									
11.									
12.									
13.									
14.									
15.									
	TOTALS	104,356	170,093		23,859	298,308	1,692	300,000	

10. APPROVAL OF THE ABOVE AMOUNT AND FOR THE PROJECT PERIOD SHOWN IS HEREBY REQUESTED.

(Signature of Authorized Officer)
Deputy Secretary of State Planning *(Title)*
March 15, 1973 *(Date)*

11. APPROVED BY

(Signature)
(Title)
(Date)

The applicant may exceed any of the line item totals by not more than ten percent, without prior HUD approval, provided such changes do not result in any change in the total project costs.

HUD-6703 (3-72) PREVIOUS EDITION IS OBSOLETE

HUD-Wash., D. C.

265921-P

ALLOCATION OF AGNES RECOVERY GRANT FUNDS
($ in Thousands)

JURISDICTION	HUD	EDA	ARC	TOTAL
Baltimore City	10	45		55
Baltimore County	25			25
Cecil County	30			30
Howard County	21			21
Maryland National Capital Park and Planning Commission	7			7
Tri-County Council for Western Maryland, Inc.			28	28
Subtotal	93	45	28	166
STATE DEPARTMENTS AND OTHERS				
Department of Economic and Community Development		118		118
Department of Natural Resources	20	30	10	60
DSP-Flood Disaster Coord. Office	37	40	10	87
DSP-Comprehensive St. Plng. Div.		11	2	13
Susquehanna River Basin Comm.		6		6
Subtotal	57	205	22	284
TOTAL	150	250	50	450

BALTIMORE CITY PROGRAM

REVISED SCOPE OF SERVICES FOR AMENDED FLOOD RECOVERY AND PREVENTION PLANNING GRANT ("Agnes" Relief Funds)

SCOPE OF SERVICES
Baltimore City

I. Overall Study Design and Establishment of Coordination Process

The Baltimore City Planning Department will establish a coordinated floodplain and storm water management process with the participation of all State and city agencies properly involved in such a process.

II. Preliminary Flood Plain-Storm Water Management Program Outline in Gwynns Falls and Herring Run

A. Pre-project investigation will consist of reviewing all available reports, material, maps and data in the watersheds of Gwynns Falls and Herring Run.

B. Inventory and Analysis

1. Based on available data on past flooding, critical flooding problems in industrial, commercial, residential and other parts of watersheds, will be identified, mapped and evaluated.

2. The economic and social impact of flooding in major disaster areas will be determined.

3. The Department will assist the Mayor's Advisory Committee on Herring Run in the analysis of problems associated with flooding and the development of solutions.

4. Analyze local drainage problems with the help of citizen groups. Evaluate impact of present uses within the 100-year flood plain wherever delineated as well as the impact of surrounding uses in the watershed on the flood plain.

5. Identify land management, fiscal and administrative issues and problems.

C. Preliminary Flood Plain and Storm Water Management Guidelines

Making use of the consultant study for the Jones Falls Valley develop preliminary storm water management guidelines for the Gwynns Falls and Herring Run Watersheds with reference to issues and problems identified under the work elements listed above. These would include:

1. Guidelines for on-site run-off management.

2. Guidelines for sediment and erosion control.

3. Flood prevention and protection policy measures in critical areas.

4 4. Floodplain-stormwater management regulations.

5. Identification of major and minor project study areas for flood control, sediment and erosion control in both the watersheds.

6. In coordination with Baltimore County, an impact analysis of County growth on Gwynns Falls and Herring Run and identify areas where County regulations will have to be upgraded for effective management of the watersheds.

III. Contribution of the City to the Joint Floodplain Management Study

A. Assist the Consultant and Baltimore County in formulating a base map and associated graphics in analyzing the watershed as a hydrologic unit.

B. Assist the Consultant in identifying historic information concerning damage and related problems in the City.

C. Provide Consultant with all flood related City regulations or ordinances.

D. Provide overall assistance to aid the Consultant in carrying out those services as set forth in Exhibit B.

End Products

1. Overall program design for the entire City of Baltimore on floodplain and stormwater management.
2. Establishment of an inter-agency (within City) coordination process for formulation of watershed plans and programs and their implementation.
3. Identification of floodplain and stormwater management problems and issues in the watersheds of Gwynns Falls and Herring Run.
4. Preliminary floodplain criteria and guidelines for Gwynns Falls and Herring Run (on the basis of which detailed area development plans could be prepared).

BUDGET

Federal Allocation -	HUD -	$10,000
	EDA -	45,000
Contributed Services Required -		5,000
Total Program Costs		$60,000

Program Expenditures

Consultant Services -	$24,900
Staff Salaries -	35,025
Project Inspection Fee -	75
	$60,000

Salaries

Principal planner, full-time @ $16,000 per year -	$24,000
Planning associate, half-time @ $10,000 per year -	5,000
Draftsman	6,025
	$35,025

FLOOD PLAIN AND STORM WATER MANAGEMENT PROGRAM
OUTLINE FOR GWYNNS FALLS AND HERRING RUN

	Planner Man Months	MONTHS																	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1. Overall Study Design	3	X	X	X															
2. Coordination Process	3				X	X	X												
3. Pre-Project Investigation	2							X	X										
4. Inventory and Analysis	5									X	X	X	X	X					
5. Preliminary Flood Plain and Storm Water Management Outline	5														X	X	X	X	X
TOTAL	18																		

(Note: 1 X for each month)

BALTIMORE COUNTY
PROGRAM

SCOPE OF SERVICES

Baltimore County Element

Joint Study of
Storm Management Problems
of the
Jones Falls Watershed

In addition to time, material, and facility contribution made by the County in the general support of this project as outlined in the Consultant's Scope of Work, including expenses incurred in the preparation of pertinent information, participation in project planning and progress review meetings, and technical discussion with City and Consultant personnel, the County will perform the following specific work elements. These elements interface with the task and sub-task work elements of the same title and alphanumeric designation as indicated in the Consultant's Scope of Work, and work element time scheduling is to correspond with the project milestone chart.

Task 1 - Preliminary Investigation

A. Assemble for review by Consultant all pertinent stormwater management reports and related data for the City and County areas in the Watershed.

Task 2 - Inventory and Analysis

A. With assistance of Consultant and City representatives, formulate a base map and associated graphics for use in analyzing the watershed as a hydrologic unit. The related base data shall include existing and future residential, industrial and commercial development identification; stormwater control, collection, and conveyance systems; soils characteristization; and major drainage area delineation. This information will be gathered as promptly as possible.

B. Provide to the Consultant the high water mark and alluvial soils information required for determination of a 50 to 100-year floodplain in the County portion of the Jones Falls Watershed.

BUDGET

Federal Allocation	-	HUD -	$25,000
Contributed Services Required	-		12,500
Total Program Costs			$37,500

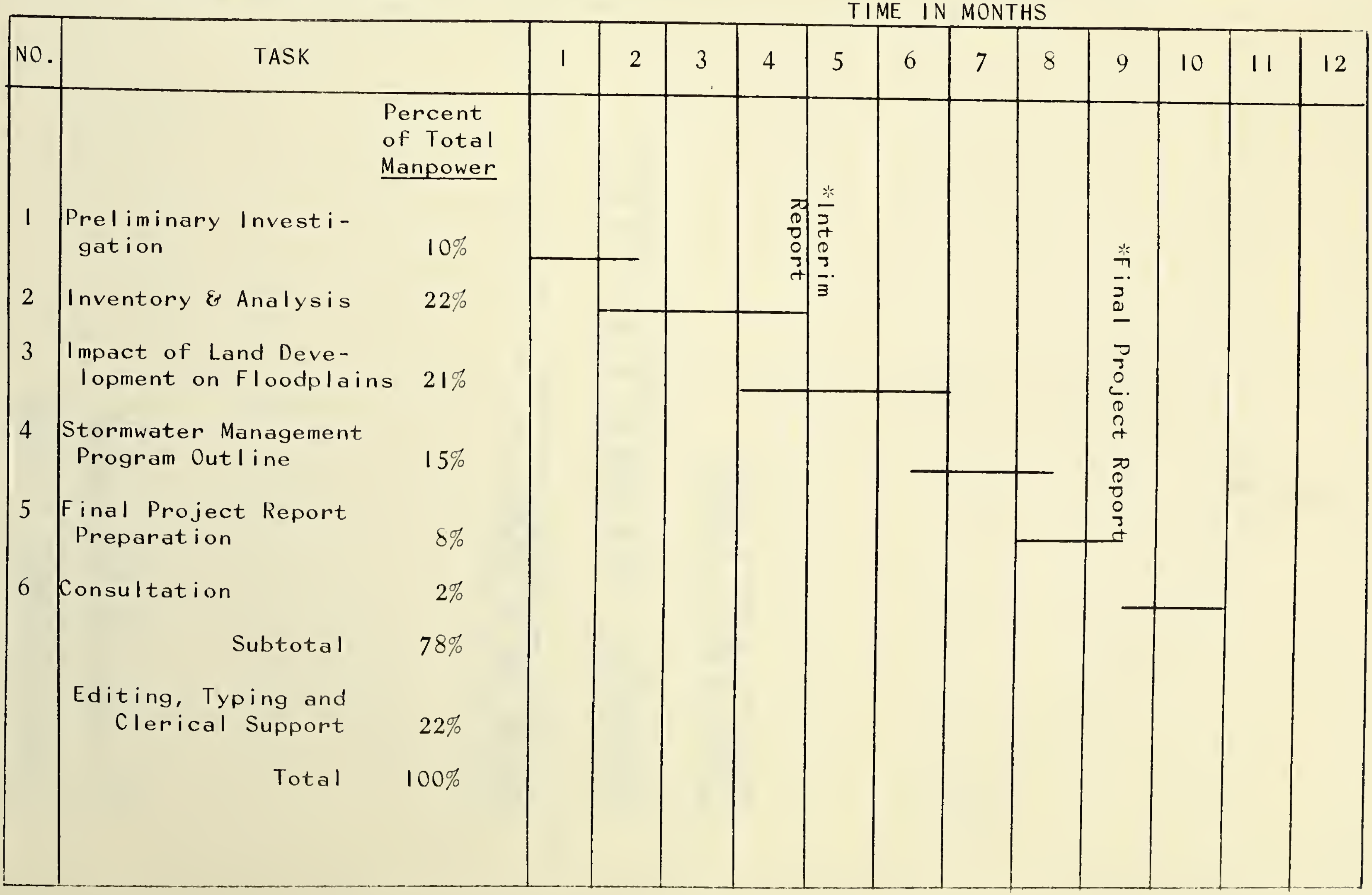
Program Expenditures

Consultant Services	-	$24,813
Staff Salaries	-	12,500
Project Inspection Fee	-	187
		$37,500

MILESTONE CHART

TITLE: Study of Storm Water Management Problems in the Jones Falls Watershed
CLIENT: Maryland Department of State Planning
ADDRESS: Baltimore, Maryland

PROPOSAL NO. 072-39-85-1532
DATE: 24 September 1973



NO.	TASK	Percent of Total Manpower
1	Preliminary Investigation	10%
2	Inventory & Analysis	22%
3	Impact of Land Development on Floodplains	21%
4	Stormwater Management Program Outline	15%
5	Final Project Report Preparation	8%
6	Consultation	2%
	Subtotal	78%
	Editing, Typing and Clerical Support	22%
	Total	100%

BALTIMORE
CITY-COUNTY JOINT
PROGRAM

Scope Of Services Of
ROY F. WESTON, INC.
Consultant

CONSULTANT'S SCOPE OF SERVICES

Roy F. Weston, Inc.

Study Program of Storm Water Management Problems in the Jones Falls Watershed

Task 1 - Preliminary Investigation

A. Review available stormwater management reports and related data for the areas within the watershed. This will include study results and recommendations for controlling development, stormwater runoff, stormwater channelization, erosion control and prevention of sedimentation problems.

B. Make a survey of urban areas where interjurisdictional conflicts exist regarding stormwater management similar to those within the study area. Identify how analogical management problems have been addressed.

C. Present an oral report summarizing the results of A and B above at a joint meeting with representatives from Baltimore City, Baltimore County, the Jones Falls Valley Industrial Association, and the Maryland Department of State Planning.

D. Immediately following C, discussions will be initiated to formulate study goals and procedures.

Task 2 - Inventory and Analysis

A. Assist County and City representatives in formulating a base map and associated graphics for use in analyzing the watershed as a hydrologic unit. The related base data will include existing and future residential, industrial, and commerical development identification; stormwater control, collection, and conveyance systems; soils characterization; and major drainage area delineation.

B. Utilizing (1) the graphic inventory prepared in A above, (2) information developed by Task 1, and (3) historical information concerning damage and related problems provided by Baltimore City and Baltimore County, the following information will be compiled:

a. Flood Prone Areas

The 50-year floodplain will be determined by interpolation between the 25 and 100 year water surface profiles established in the Flood Insurance Study. In the City, the Flood Insurance Study for Jones Falls Watershed will be the basis for 100-year floodplain identification. In the County, a floodplain representative of 50 to 100 year storms will be delineated by integrating high water mark and alluvial soils information.

b. Critical flooding problems and significant damage areas.

C. In conjunction with Task 3 activities, evaluate the adequacy of present City and County administrative and regulatory floodplain management activities and related development codes for the Watershed. This will include not only stormwater and flood control, but also zoning, building codes, and subdivision regulations.

Task 3 - Impact of Land Use and Development Policy on Flood Prone Areas

A. After the analysis of the present stormwater management systems, and using the inventory prepared in Task 2, evaluate the impact of existing land uses within the floodplain on flooding problems and assess the impact of land uses outside the floodplain on the general condition of streams in the Watershed.

B. Recommend a methodology for use in the watershed to evaluate the impact of potential future development on the floodplain and related stormwater management.

C. Prepare and submit ten (10) copies of an Interim Technical Report to include the following discussions:

1. Present status of stormwater problems and stormwater management in the Jones Falls Watershed.
2. Implications of future development in the Jones Falls Watershed on stormwater management.
3. A methodology to gauge the impact of Watershed development on the floodplain and stream conditions.

Task 4 - Stormwater Management Program Outline

A. Incorporate the following elements into a comprehensive Jones Falls Watershed Stormwater Management Program:

1. Immediate protection and policy measures for areas in critical flood hazard areas; to include order of magnitude cost estimates for any suggested structural measures.
2. Land use proposal based on the relocation of industries from floodplains and similar adjustments.
3. Guidelines to be used by developers and builders for on-site stormwater runoff management.
4. Future studies that should be undertaken by the Corps of Engineers and other agencies for flood, sediment, and erosion control in the Watershed.
5. Guidelines for sediment and erosion controls.
6. Funding possibilities for support of implementing a stormwater management program in the Jones Falls Watershed.
7. Applicability of recommendations and guidelines for the Jones Falls Watershed to other areas in the City and County.

B. The management program will also include program development and implementation specifying participants and their roles.

C. Based on the evaluations in Tasks 2 and 3 and with the assistance of Baltimore City and Baltimore County, provide ordinance(s) which will provide a framework for County and City cooperation for effective management of the Jones Falls Floodplain.

Task 5 - Final Project Report Preparation

A. Prepare a report based on the overall study with particular emphasis on the recommended Stormwater Management Program outline and the related steps necessary to implement a comprehensive management program for the Jones Falls Watershed. In addition to Task 4 information, the report will include appropriately revised material from the Interim Report.

B. Submit ten (10) draft copies for review by City, County and appropriate State personnel. After the review procedure, fifty (50) final copies of this report, presenting the outline for a Stormwater Management Program for the Jones Falls Watershed, will be prepared and distributed as follows:

10 copies to State Project Coordinator.
20 copies to the Project Coordinator from the City of Baltimore.
20 copies to the Project Coordinator from Baltimore County.

Task 6 - Consultation

After submission of the Final Project Report, additional consultation time may be required to answer questions or to participate in explanatory meetings. An allocation of five (5) mandays has been made for this purpose. Additional consultation services, if desirable, would be available on request on a per diem plus direct expenses basis.

BUDGET

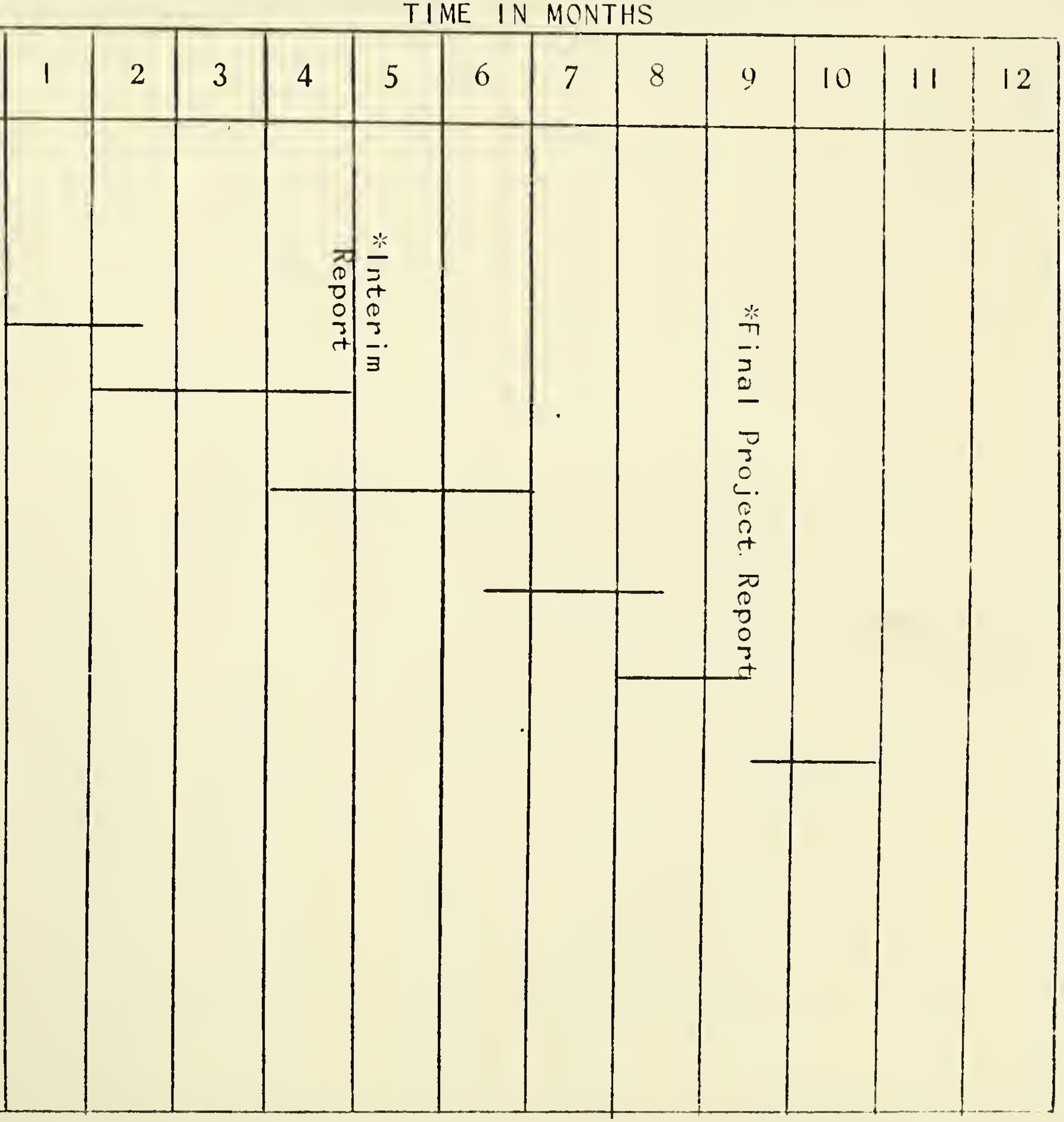
Federal Allocation		
EDA (Baltimore City)	-	$24,900
HUD (Baltimore County)	-	24,813
		$49,713
Contract Services (Lump Sum)	-	$49,713

MILESTONE CHART

TITLE: Study of Storm Water Management Problems in the Jones Falls Watershed
CLIENT: Maryland Department of State Planning
ADDRESS: Baltimore, Maryland

PROPOSAL NO. 072-39-85-1532
DATE: 24 September 1973

NO.	TASK	Percent of Total Manpower
1	Preliminary Investigation	10%
2	Inventory & Analysis	22%
3	Impact of Land Development on Floodplains	21%
4	Stormwater Management Program Outline	15%
5	Final Project Report Preparation	8%
6	Consultation	2%
	Subtotal	78%
	Editing, Typing and Clerical Support	22%
	Total	100%



MILESTONE CHART

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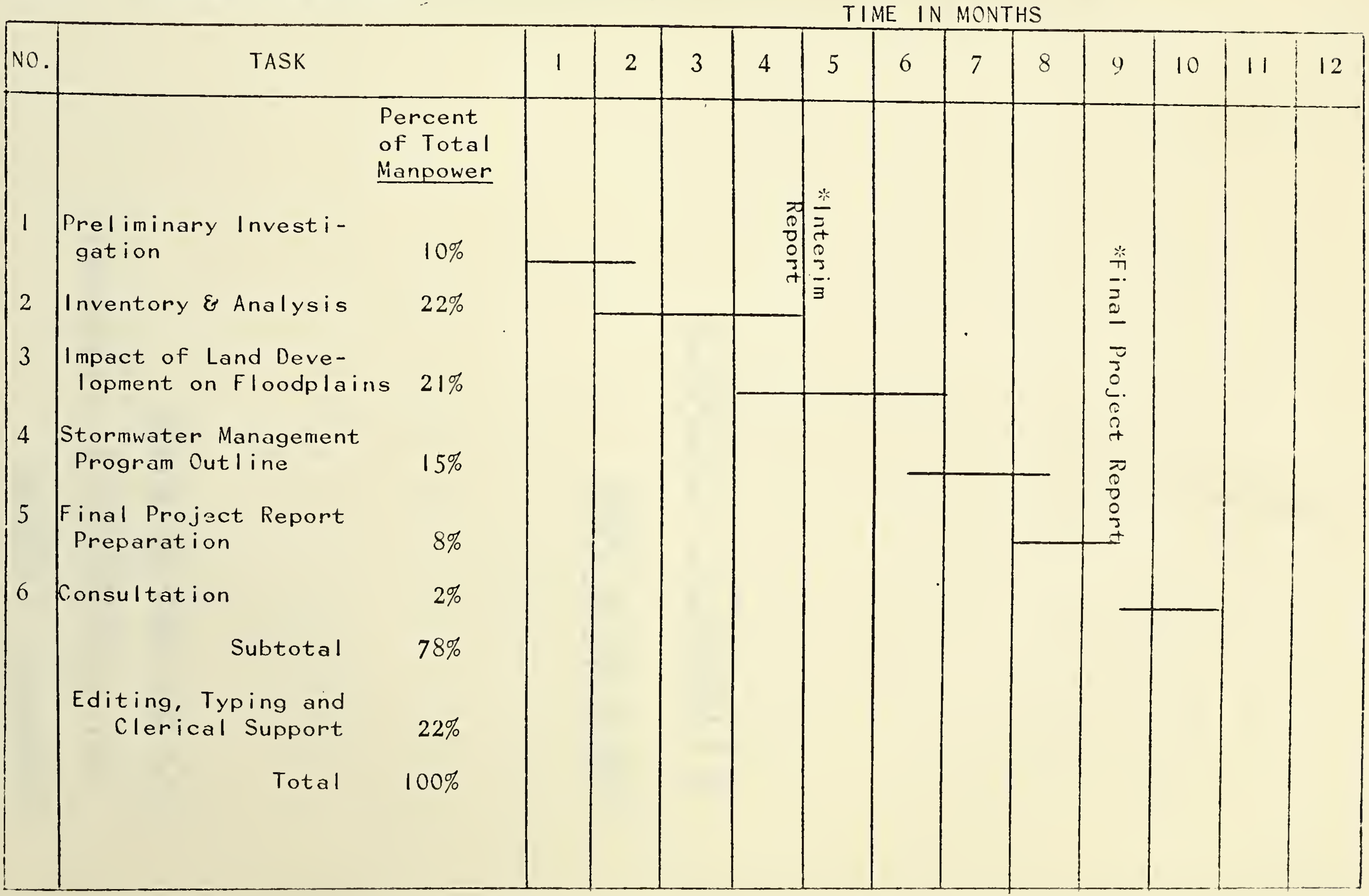

NO.	TASK	Percent of Total Manpower
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4	Stormwater Management Program Outline	15%
5	Final Project Report Preparation	8%
6	Consultation	2%
	Subtotal	78%
	Editing, Typing and Clerical Support	22%
	Total	100%

CECIL COUNTY
PROGRAM

Scope Of Services Of

EDWARD H. RICHARDSON, INC.

JAMES S. LEANOS,

Consultants

SCOPE OF SERVICES

Cecil County

Planning Services to be Provided by Cecil County as a Part of the Port Deposit Flood Recovery and Prevention Planning Program

1. A Cecil County Planning Commission staff planner shall maintain residence in Port Deposit an average of three (3) days a week to provide a liaison with local town officials, county officials, and Edward H. Richardson, Associates, Inc., program consultant.

2. The Cecil County Planning Commission will coordinate and direct the work program of Edward H. Richardson, Associates, pursuant to the consultant's Scope of Services. Any conduct which indicates a departure from the consultant's Scope of Services must be brought to the attention of the Planning Agency.

3. The Cecil County Planning staff will hold meetings at the end of each quarter with the Mayor and Town Council of Port Deposit and the Cecil County Planning Commission to review work completed and in progress. Memoranda of these meetings will be kept on file.

4. The Cecil County Planning Commission will meet with Edward H. Richardson, Associates at the beginning of each calendar quarter to review and coordinate the program. Memoranda of these meetings will be kept on file.

5. The Cecil County Planning Commission will provide the following information and assistance to Edward H. Richardson, Associates:

    A. Demographic data and materials.
    B. Available physical survey data.
    C. Assist consultant in review of all existing flood data affecting the Town of Port Deposit.
    D. Provide consultant with topographic information at a detail sufficient to prepare recommendations and work estimates for recommended alternative physical plans.

6. The Cecil County Planning Commission will perform the following with regard to the overall program:

A. Assist the Town Council in fulfilling Town's obligations with regard to their emergency status under the Federal Flood Insurance Program.
B. Assist the Town Council in establishing a building code which will restrict construction within flood-prone areas.
C. Establish the necessary framework for implementation of flood prevention, economic development and related programs which are being developed by the consultant.
D. Provide the necessary technical assistance in establishing a Planning Commission for the Town of Port Deposit.
E. Provide administrative support to the Mayor and Town Council in their attempt to analyze the impact of the Bainbridge Naval Training Center on the Town.
F. Prepare a "one-year after" flood damage survey and related report of findings.
G. Organize a Town and County joint effort to obtain the services of the Soil Conservation Service and/or Corps of Engineers to initiate stream stabilization and flood control projects in the Town of Port Deposit.

7. Cecil County shall prepare and submit ten (10) copies of a project completion report describing services provided and work accomplishments pursuant to this contract.

BUDGET

Federal Allocation	-	HUD-$30,000
Contributed Services Required	-	15,000
Total Program Costs	-	$45,000

Program Expenditures

Consultant Services	
James S. Leanos -	$ 1,620
Edward H. Richardson, Asso., Inc. -	19,255
County Contributed Services -	15,000
County Reimbursable Services-	8,900
Project Inspection Fee -	225
	$45,000

CONSULTANT'S SCOPE OF SERVICES

Edward H. Richardson Associates, Inc.

1. Work directly with the Cecil County Planning Commission, the Staff Planner, Town Officials of Port Deposit and the Maryland Department of State Planning providing technical assistance as related to the scope of services and insuring program coordination and direction. This work shall include: design and analysis of economic studies; assistance in the creation of a Port Deposit Planning and Zoning Commission.

   In addition, work under this scope of services shall be coordinated with the following agencies to insure continuity of effort and to avoid duplication of work:

   a. Susquehanna River Basin Commission
   b. Governmental Agencies studying the possible location of Nuclear Generation Facilities at Bainbridge Naval Training Center
   c. U.S. Army Corps of Engineers
   d. Soil Conservation Service
   e. Maryland State Roads Commission

2. Conduct a program reconnaissance whose goal shall be: the assemblage and review of required data; conductance of ground surveys in order to finalize topographic information already obtained by the Cecil County Planning Commission; conductance of required preliminary hydraulic studies; and the conductance of economic and real estate development analyses.

3. Perform a feasibility analysis and preliminary studies of recommended physical project alternatives. More specifically, this effort shall evaluate the following:

   a. Alternatives for development in non-flooding areas (including those recommended for annexation).
   b. Possible access routes and corridor studies for hillside or uphill development.
   c. The need for road system improvement including appurtenant construction and drainage considerations.
   d. Susquehanna River flood control preliminary study alternatives.

4. As the end product of Item 3, prepare exhibits and sketch plans adequately illustrating proposed alternatives. Proposed

alternatives shall have preliminary estimates of costs to aid in the decision-making process.

5. Provide for Mayor and Council of Port Deposit technical assistance and evaluation of physical program report and recommendations for its implementation.

6. Provide necessary ground control surveys to enable completion of recently completed aerial photographic work (by others). Attempts shall be made to utilize as many existing, easily recoverable Town boundary points as possible for inclusion as ground control points.

7. Utilize photogrammetric maps to prepare a base map of the Town and peripheral areas at a scale adequate for use as a design and planning tool. This map should probably have a minimum scale of 1" = 200'.

8. Conduct field surveys and hydraulic analyses of existing storm drainage system to determine adequacy and present physical condition. In addition, a preliminary study shall be prepared with recommendations and preliminary estimates of costs for improvement. This study shall also recommend methods of financing this work.

9. Analyze alternatives for reducing flooding impact on the Town from the Susquehanna River and prepare recommendations and cost estimates for recommended alternatives. Under this phase of the project special attention shall be given to reducing flood vulnerability of the Wiley Company and possible alleviation or reduction of river bank erosion.

10. Conduct an open space recreational use study within flood plain areas. Emphasis on water-oriented recreation shall be considered. This study will be presented in exhibit form with estimates of costs.

11. Evaluate the Total Physical and Economic Losses incurred by Port Deposit as a result of the Agnes Storm. In this activity, a consolidation and addition to the piecemeal analyses performed to date will be accomplished. In addition, a basic study shall be conducted to determine the capacity of Town property owners to repair their properties, relative to the extent of income available to support such repairs, and the level of special subsidy assistance available and needed to complete the repairs.

12. Retain a qualified consultant(s) to conduct required studies and prepare the following reports:

Real Estate and Development Analysis.

a. Report on Port Deposit's Residential, Commercial, and Industrial Potentials:
A review of the area market will be made and recommendations will be made regarding immediately marketable facilities, and facilities longer range marketing approaches.
b. Report on Needed Support Facilities:
An inventory of existing facilities will be made, and recommendations will be made regarding the upgrading or addition to these facilities. Such facilities as roads, rail service, electrical service, port access, etc., will be among those considered.

The Real Estate and Development Analysis shall be performed during the initial stages of this proposed study in order to provide areas of emphasis and partial delineation of goals to be utilized in other phases of the work.

The goal of Items 1 - 12 in addition to those already delineated shall be:

a. Exhibits suitable for public display illustrating the recommendations of this study.
b. A written report summarizing work accomplishments and end results of this study including recommendations and costs.

The services outlined above shall be provided for a lump sum of Nineteen Thousand Two Hundred Fifty-Five Dollars ($19,255.00).

Twelve (12) copies of the final study shall be furnished the Project Director at the completion of the work; additional copies shall be furnished at cost. We propose to complete the work nine (9) calendar months after receipt of the contract documents notifying us to proceed.

CONSULTANT'S SCOPE OF SERVICES

James S. Leanos

This Scope of Services for program development activities relates to Cecil County's Flood Recovery, Rehabilitation and Prevention Planning Program for Port Deposit. The program expands earlier efforts the consultant has performed for the Mayor and Town Council of Port Deposit under the direction of (and under contract with) the Maryland Department of Economic and Community Development. Both the work performed under the DECD contract and that proposed in the Flood Recovery and Prevention Planning Program were and are directed towards the achievement of specific measures to bring about twon revitalization (as outlined in the Cecil County Proposal to the Department of State Planning's FDCO) and to reduce substantially its vulnerability to future flooding. The proposed work will precede and be compatible with comprehensive planning activities which are contemplated by Cecil County to be initiated by the town in Fiscal Year 1974, with assistance provided by the "Hurricane Agnes" funded program

WORK ITEMS:

Item I - Assemble information necessary for selection of subcontractors.
Arrange Mayor and Town Council Review and Approval Process.
Complete Consultant/Sub-Contractor screening by May 16, 1973.

Item II - Prepare plan of study which is to include:
  Development of program scheduling,
  Development of Scope of Services for Sub-Contractors, and
  Conduct contractual negotiations.

Item III - Initiate program coordination development activities of State, County and town levels.

Item IV - Preparation and submission of report of activities pursuant to this contract keyed to initiation of the study and Work Items I - III.

HOWARD COUNTY PROGRAM

Scope Of Services Of

DALTON, DALTON, LITTLE & NEWPORT,

Consultant

HOWARD COUNTY CONTRACT

No services are to be provided by Howard County. County elected to contribute their match share in cash to the DSP to be used to provide consultant services of a total amount of $32,350 as clarified below under Budget.

BUDGET

Federal Allocation	-	HUD-$21,000
Contributed Cash	-	11,507
Total Program Costs	-	$32,507

Program Expenditures

Consultant Services	-	$32,350
Project Inspection Fee	-	157
		$32,507

CONSULTANT'S SCOPE OF SERVICES

Dalton-Dalton-Little-Newport

A. Evaluate existing and potential flood problems and damage in the Allview Estates and in the Elkridge Area based on existing drainage area characteristics and available flood records including data developed by Arthur W. Edwards, Associates.

Determinations shall be made regarding potential damage to:

1. Private homes
2. Businesses
3. Bridges, culverts, etc.
4. Roads
5. Private property other than homes due to storms of 10-, 20-, and 100-year frequency interval.

B. Prepare base maps reflecting land use of the drainage areas based on existing watershed development (1973) as well as ultimate watershed development from the General Plan, and to develop exhibits to reflect the flood plain areas for the following conditions at each problem area:

1. Existing watershed characertistics - 1972

    a. 10-year frequency storm
    b. 20-year frequency storm
    c. 100-year frequency storm
    d. Worst flood of record

2. Projected 1982 watershed characteristics

    a. 10-year frequency storm
    b. 20-year frequency storm
    c. 100-year frequency storm

3. Projected 1992 watershed characteristics

    a. 10-year frequency storm
    b. 20-year frequency storm
    c. 100-year frequency storm

4. 4. Ultimate watershed development (in accordance with Howard County General Plan)

    a. 100-year frequency storm

Determinations shall be made regarding affect on residences, businesses, and potential building lots. The determination of damages resulting from Hurricane Agnes and other recent storms is within the scope of work proposed by Arthur W. Edwards Associates, Inc.

C. Determine alternate interim measures to reduce flood damage potential, taking into consideration the possible development of long-range flood protection measures such as possible implementation of the PL-566 flood control program and Corps of Engineers channelization. Alternate interim measures shall consider compatibility with possible construction schedules for long-range flood control programs projected by the Department of Public Works and shall also consider the appropriateness of acquisition of affected improvements in lieu of protective construction in conjunction with the results of the Arthur W. Edwards Study.

D. Coordinate with the Arthur W. Edwards Associates Study in the evaluation of alternate interim flood protection measures and the development of ultimate strategies and priorities.

E. Develop alternate solutions and/or development strategies for interim flood control measures, primarily physical improvements but including possible acquisition of flood endangered improvements as an alternate. These efforts will consider the data regarding the attitudes and responses of affected residents collected by Arthur W. Edwards Associates.

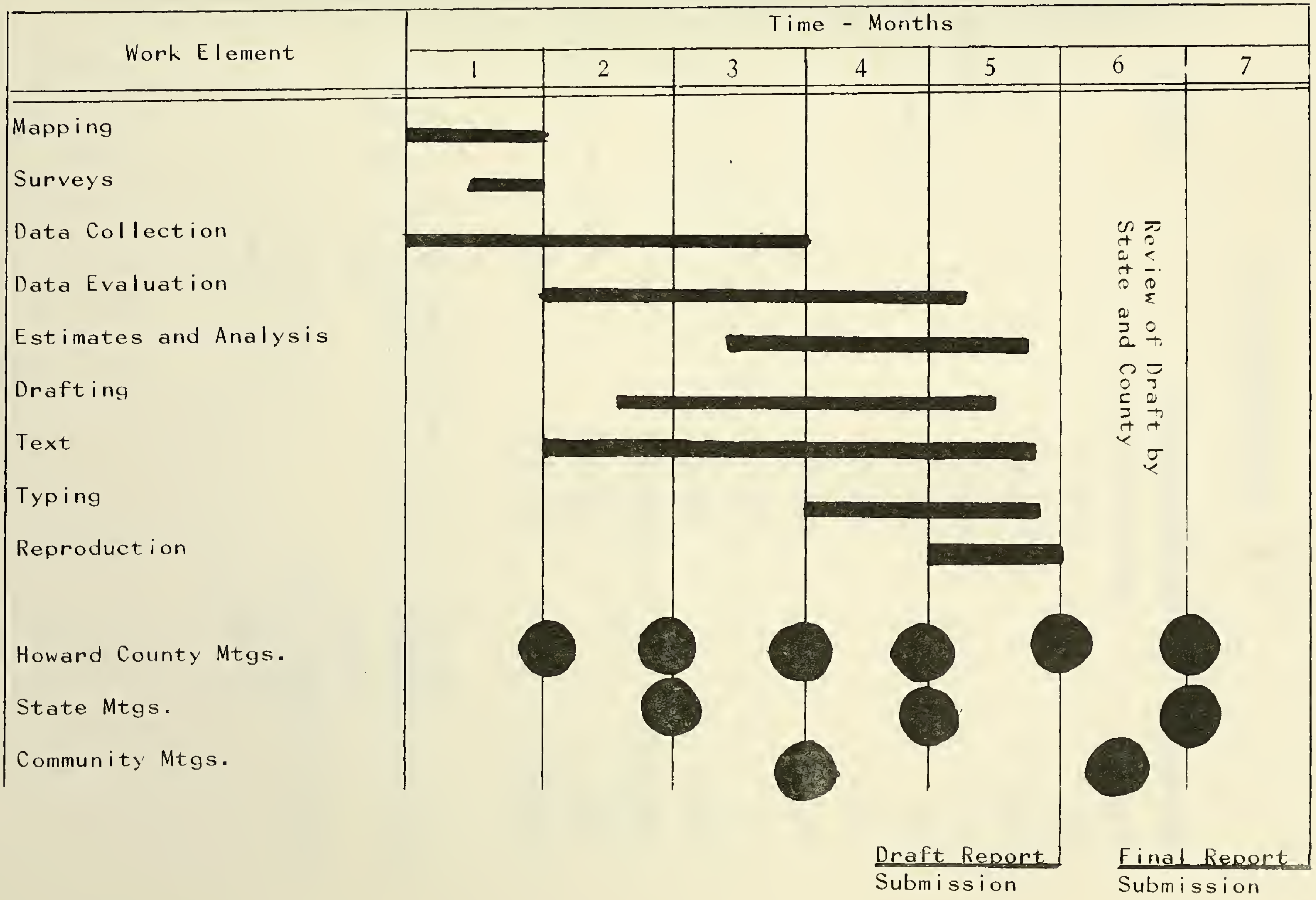
Investigation into possible legislation involving public ownership of flood plain areas is within the scope of work proposed by Arthur W. Edwards Associates.

F. Evaluate the economic feasibility of the various alternate solutions to supplement the results of the survey of affected residents and businesses collected by Arthur W. Edwards Associates.

G. Consider and evaluate all data collected and all alternate solutions developed in order to recommend a program of action to provide interim flood protection for the two study areas including a schedule and estimate of costs for budget purposes.

H. Provide 50 bound copies of the Report to contain text describing the problems, causes and effects of flooding; an evaluation of data collected; development of alternate solutions; recommendations regarding protective action, including costs; accompanied by charts, graphs, and map exhibits to clearly describe problem areas and probable effects.

PROJECT SCHEDULE



FEE DETERMINATION

Element		Allview Estates	Elkridge
Mapping		by Howard County	$ 1,100
Surveys		$ 900	600
Data Collection		6,450	6,200
Data Evaluation		1,000	1,000
Estimates & Analysis		700	500
Drafting		2,300	2,200
Text		3,000	2,800
Typing		300	300
Supervision & Coord.		600	600
	Subtotal	$15,250	$15,300
Community Meetings (two)		600	600
	TOTAL	$15,850	$15,900

Allview Estates	$15,850
Elkridge	15,900
TOTAL	$31,750
Reproduction	600
GRAND TOTAL	$32,350

MARYLAND NATIONAL CAPITAL PARK AND PLANNING COMMISSION PROGRAM

SCOPE OF SERVICES

The Maryland-National Capital Park and Planning Commission
Office of Research, Information and Management Analysis

The planning assistance funded by this contract relates to work items C-4 and C-5. The contributed and compensated services of the Contractor are applicable to work items C-4 and C-5.

SCOPE OF WORK FOR A STORM WATER MANAGEMENT PROGRAM STUDY FOR THE ANACOSTIA RIVER BASIN

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Scope of Work for a Storm Water Management Program Study in the Anacostia River Basin

A. Preliminary Analysis

1. Definitions

a. Storm water is defined as diffused water derived from precipitation and collected in natural or artificial drainage systems.

b. Flood water is water derived from all sources which flow out of the confines of the normal stream channel.

c. Study area - In general, the study area includes all of the Anacostia River Basin with the exception of the lower reach of the Anacostia River within the District of Columbia and tributaries in Prince George's County entering the river below the confluence of the Northeast and Northwest Branc streams.*

d. Other terms will be defined as required.

2. Study Objectives

a. To predict the effect of development on storm and flood water produced in the study area and to develop a program to implement efficient control measures for this and other areas.

b. To define floodplains in the study area.

c. To provide a means of evaluating requests for permits to change the "...course, current, or cross-section of streams and bodies of waters of the State," by the establishment of a procedure to develop encroachment limits and induced flood surface elevation limits based on the hydrologic characteristics, as they exist and may be expected to change with future development in the subject watershed.

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*The major portion of the study covers the Northeast Branch and all of its tributaties and the Northwest Branch and all of its tributaries. Beaverdam Creek, which empties into the Anacostia River at the D.C. line, is excluded from the hydrologic study due to the special problems associated with this watershed. A separate study should be undertaken for Beaverdam Creek.

3. Analyze Legal Responsibilities

An analysis of the existing legal responsibilties and the execution of those responsibilities by the various agencies involved in storm water management in the Bi-County region will be furnished by The Maryland-National Capital Park and Planning Commission.

4. Select and Evaluate Model

After the identification and evaluation of available data, a hydrologic model will be selected and evaluated to achieve the objectives and purposes as described in this scope of study within the constraints of time, money, and available data.

The model selected should be adaptable to a number of variable factors and additional elements that may need to be considered in updating the basin hydrology and in determining the response of a basin or any of its sub-basins to changing conditions produced by changes in land use.

5. Identification of Existing Data

The data necessary to this study will be identified from all available sources and its compatability determined. This data will include, but not be limited to, the Army Corps of Engineers floodplain studies of the Anacostia River and its tributaries; USGS studies of hydrology and sedimentation in the Anacostia River Basin; storm drainage surveys by WSSC and the Montgomery and Prince George's Counties' Departments of Public Works; meteorology from the U.S. Weather Bureau; land use, population projections, zoning and master plans from the Maryland-National Capital Park and Planning Commission; water quality and other studies by the State Department of Natural Resources and County Health Departments; soils and sediment control data from SCS and SCD's; and infra-red photography where available. If feasible, collection of the data determined to be necessary for this study will be initiated during this phase.

6. Determine Methods of Financing

The following will be investigated as possible sources to help finance this study:

Water Resources Planning Funds - Title III
State Department of Natural Resources
The Maryland-National Capital Park and Planning Commission
Water Resources Research Grant
Environmental Protection Agency Demonstration Grant
County Governments
Washington Suburban Sanitary Commission

7. Determine Need for Consultant

During development of the final scope of study, it will be determined whether all tasks required in the final scope of study can be performed satisfactorily by and allocated equitably between the agencies or if it would be necessary or expedient to hire consultants to assist in the study.

8. Technical Advisory Groups

The Environmental Evaluation Task Force will be involved in the review of this study as it progresses and will assist in the formulation of final recommendations for implementing a comprehensive storm water management program.

A technical advisory committee, comprised of representatives from appropriate agencies involved in storm water management in the Bi-County area, should be formed at the beginning of the study. Discussions and presentation of interim reports to this group during the course of the study will provide necessary "feedback" important to developing a storm water management program.

B. Revise Scope of Work (if necessary)

Based on existing and needed data, the model selected and funding received, a revised scope of study will be developed.

C. Work Program

1. Development of Hydrologic Model of Watershed

a. Model Description

A model (or models) will be selected and tested which will (1) describe the outflow hydrograph from each selected sub-watershed within the study area, and (2) route these aggregate hydrographs through all successive reaches to determine the flood surface profiles.

b. Model Utility

The model will assist in evaluating the effects of land use, storm water management policies, and floodway conditions on the generation of storm water, sediment, and associated flood problems in the watershed.

c. Data Collection and Development

The necessary basic data will be collected and organized in such fashion as to allow easy access and retrieval for analysis, including capabilities for computer mapping.

The development of necessary data, information and studies not already existing and the translation of necessary data, information and studies already existing into a common format acceptable for input into the model. Information on population, land use, zoning, and other necessary and available data will be collected to aid in estimating runoff from both existing and future developments and the determination of present and future flood elevations.

2. Delineate Floodplains

a. Delineate present and future 50, 100 or other year floodplains as required based on the estimated present and future land use.
b. Delineate flood limits necessary for the operation of the State permit system to the satisfaction of the Department of Natural Resources and the courts.

3. Determine Sub-basin Storm Water Responses

Existing and projected storm water responses from selected subwatersheds will be determined to enable ranking of the

ability of the subwatersheds to accommodate present land use, use allowed under existing zoning, and ultimate planned use.

4. Identify Problem Areas

Based on the delineation of floodplains and existing and projected storm water responses, problem areas (where storm water run-off is generated and resulting downstream flooding conditions occur) will be identified for both existing and future conditions.

5. Presentation of Alternative Solutions

a. Administrative Controls
Alternative solutions to problems identified in this study should provide opitons available in relation to present and proposed governmental and administrative activities which affect the development and utilization of the basin's resources.

b. Storm Water Runoff Controls
Some of the possible solutions to reduction of storm water damage that need to be considered are the type, size and extent of on-site detention measures that would be needed to hold runoff to existing levels and/or possible drainage system modifications off-site. Special attention should be given to the effectiveness of sediment and erosion control in these and existing measures.

c. Flood Damage Reduction Measures
Possible solutions to reduction of flood damages should be considered in conjunction with the previously mentioned storm water management measures. Various mixes of measures for flood damage reduction should be considered, including but not limited to floodplain evacuation, flood proofing, levees, impoundments, channel modifications, and scheduled releases.

6. Manual for Evaluating and Mitigating Effects of Land Use on Storm Water Runoff

Procedures for evaluating the impact of land use changes and standards and specifications for runoff control structures should be incorporated into a manual for the benefit of public and private developers and as a guide in planning

for storm water management. It should be possible to determine the level of control needed to maintain a stable condition in the watershed without increasing runoff rates or flooding.

7. Evaluate Effectiveness of Existing Controls

The technical and financial aspects of administrative systems within the basin will be identified and evaluated, along with existing laws and ordinances pertaining to storm water management, in order to determine what changes may be needed for effective implementation of proposed storm water management programs.

D. Proposed Management Program and Implementation

An action program will be developed which will (1) define the most critical problems (identified in Step 4) listing them according to priority of consideration; (2) detail technical and administrative solutions, (identified in Step 5) and rank these according to effectiveness; (3) provide a program for implementing recommendations; (4) describe the type of coordination needed between management, legislative, and planning activities to maintain a current program; and (5) estimate the costs of program implementation.

Actions necessary to maintain a workable program should include at least the following:

1. Storm water management controls in master plans, zoning ordinances, and subdivision and building codes.

2. Strengthen legal controls and standards, including proposed specific language for changes in legislation when required.

3. A basin-wide data bank which will include appropriate hydrologic data and current changes in land use.

4. Periodic evaluation of the program's effectiveness.

E. Reports

1. Progress Reports

Quarterly progress reports will be prepared and sub-

mitted to the various agencies participating in the project. Each progress report will indicate the accomplishments to date with a description of any immediate problems that may arise while the study is being undertaken. The progress report will enable public agencies to follow the progress of the study and raise questions at such time that suitable modification in procedures and intensity can be made.

2. Technical Reports

Upon completion of various technical tasks, technical reports will be prepared. These reports will provide the technical information in the form of the data collected and the analysis of such data, and the inclusion of any other pertinent information. The type of reports to be prepared will include the following:

a. Analysis of legal responsibilities.
b. The development of the hydrologic model, including its description and the data collected for input.
c. Presentation of alternative solutions including the identification of problem areas and elineation of floodplains.
d. Manual for evaluating and mitigating effects of land use on storm water runoff.

Only a limited number of copies will be printed-approximately 200.

3. Final Reports

a. A final technical report will be issued at the end of the study. This report will describe the methodology used in the study, present the basic technical facts derived from the study, describe the recommendations resulting from the study, and describe the applicability of this type of study for use in other watersheds. It is estimated that approximately 500 copies will be printed.
b. A final summary report will be issued at the end of the study. The thrust of this report will be on a proposed management program and implementation plan. The final summary report will be prepared in a nontechnical language for wide distribution. Only a

summarization of the final technical report will be included in the final summary report. Since this report will be more widely distributed for general use, it is estimated that approximately 2,000 copies will be printed.

F. End Products

Several useful products will be developed throughout the study.

1. Floodplain Maps (Step C.2.)

The 50- and 100-year floodplain levels will be determined on the basis of ultimate development in the basin. The boundaries of these and possibly other flood frequency levels will be shown on topographic maps which may be used by planners, developers, contractors and administrators to guide in their decisions relating to the use of land in areas subject to flooding.

2. Description of Alternative Solutions (Step C.5.)

Alternative actions for solving storm water runoff and flooding problems will be presented for both specific and general areas. These solutions may include legislative and administrative as well as technical measures. This report will be the basis for discussions with legislators, local government officials and citizens as input in developing a storm water management program.

3. Manual for Evaluating and Mitigating Effects of Changing Land Use on Storm Water Runoff (Step C.6.)

A guide, possibly with pertinent formulae, will be prepared for estimating the impact of various land use proposals within a watershed. This information will assist developers, planners and others in determining the size and extent of temporary and permanent structures required to control excess runoff. The legal requirements for doing this will be described in the manual.

4. Evaluation of Effectiveness of Existing Controls (Step C.7.)

In conjunction with the preliminary study of legal responsibilities for storm water management, the present activities

of the various agencies involved will be reviewed. Recommendations will be made for any changes that may be determined to be necessary for effective administration of a storm water management program.

5. Storm Water Management Program (Step D)

This report will be a specific plan of action to carry out a comprehensive, basin-wide program for controlling and managing the volume and rate of runoff of storm water in order to minimize its potentially damaging effects. The appropriate actions, such as appropriate legislation, administrative procedures and institutional arrangements, necessary for implementation of such a program will be described in detail in this report.

6. Final Reports

The final documents produced for general release will be a detailed technical report and a final summary report of pertinent recommendations for a plan of action.

STORM WATER MANAGEMENT PROGRAM STUDY
ANACOSTIA RIVER BASIN
FY 73 & 74 - MNCPPC SHARE

Component No.	Component Name	Man-Weeks	Straight Labor Cost	Fringe Benefits and Overhead	Report Production Cost	Total Cost
A	Preliminary Analysis					
1	Definitions	COMPLETED				
2	Objectives	COMPLETED				
3	Analyze Legal Resp.	17	$ 5,370			
4	Select., Eval. Model	4	1,080			
5	Identify Exist. Data	10	2,855			
6	Determine Financing	1	510			
7	Deter. Need for Consult.	1	485			
8	Tech. Adv. Groups	1	485			
	Subtotal	34	$ 10,785	$ 4,993		$ 15,778
B	Revise Scope of Study	3	1,455			
	Subtotal	3	$ 1,455	763		2,128
C	Work Program					
1	Develop. Hydro. Model	86	27,020	12,510		39,530
2	Delineate Floodplains	18	3,720			
3	Deter. Sub-Basin Respon.	8	2,120			
*4	Identify Problem Areas	22	6,870			
*5	Present Alter. Solutions	68	22,270			
6	Prepare Eval. Manual	38	10,240			
7	Eval. Existing Controls	26	8,770			
	Subtotal	266	$ 81,010	37,508		118,518

FY 73 & 74 - MNCPPC SHARE (Cont.)

Component No.	Component Name	Man-Weeks	Straight Labor Cost	Fringe Benefits and Overhead	Report Production Cost	Total Cost
D	Propose Management Program and Implement	56	$ 17,260	$ 7,991		
	Subtotal	56	$ 17,260	$ 7,991		$ 25,251
E	Prepare Reports					
1	Quarterly Progress	2	675			
2	Technical Reports	.5	135		$ 480	
2a	Legal Responsibilities	.5	135		$ 480	
2b	Hydrologic Model	4	1,080		920	
2c	Alternative Solutions	3	780		960	
2d	Manual	2	525		1,340	
3a	Final Technical	4	1,080		960	
3b	Final Summary	2.5	1,260		2,300	
	Subtotal	18	$ 5,535	$ 2,563	$6,960	$ 15,058
	GRANT TOTAL MNCPPC	377	$116,045	$53,726	$6,960	$176,733

*These areas will be funded by HUD as follows:

Federal Allocation HUD - $ 7,000
Contributed Services Required - 3,500
Total Funds Involved - $10,500
Project Inspection Fee of $52.00 will be withheld by the Department of State Planning

TRI-COUNTY COUNCIL FOR WESTERN MARYLAND, INC.

PROGRAM

SCOPE OF SERVICES

Tri-County Council for Western Maryland, Inc.

I. Discussion

As a result of the damage of Hurricane Agnes and subsequent funding for Flood Recovery, Rehabilitation and Prevention, several meetings and discussion have been held with county staff and elected officials in the three Western Maryland counties of Allegany, Garrett and Washington to review the following Flood Prevention Program Proposal. Their many comments and ideas have been integrated into the Flood Program Proposal within the financial limits of available Federal funding. The Proposal is geared to three high-priority tasks relating to long-range flood prevention planning.

Program Tasks: Simply put, the three tasks are geared to (1) assist each of the three counties and the twenty-four municipalities in Western Maryland to meet the requirements for eligibility under the National Flood Insurance Act of 1968 and provide technical assistance to flood related problems. (This task is identified in the proposal by reference number 1); (2) to improve the coordination between State and Local agencies particularly where State efforts will impact on the Local level, where State efforts will require Local imputs, and where State efforts can assist the Local level in securing financial assistance; and (3) to promote the concepts of Flood Management and Flood Prevention Planning through educational efforts to interested groups, local government, and the citizens of Western Maryland generally. (This task is identified in the proposal by reference number 2).

Coordination: After many discussions with local and State (Flood Disaster Coordination Office) officials, it was concluded; particularly in view of funding limitation, that a cooperative effort between the Tri-County Council representing the counties and municipalities of the region and the Flood Disaster Coordination Office would be meet the immediate flood prevention needs. It was further concluded that the monies available through ARC ($50,000) for a two-year time period would barely meet minimum local needs. However, meeting local needs depends on effective efforts at the State level and the utilization of the funds by both FDCO and the local level (Tri-County Council) would improve the difficult but vital coordinative aspect of the program.

Staff: To assure the maximum delivery of services locally within funding limits, the Tri-County Council would hire a single, well-qualified Flood Management Coordinator with appropriate Flood Prevention Planning experience to pursue the objective outlined for the two-year work program. The Flood Prevention Coordinator would be under contract to the Tri-County Council until program objectives were completed or until funds were exhausted. Tri-County Council staff assistance; which includes an Executive Director, Project Director, Staff Planner (this position has been authorized and recruitment underway), 30 percent of the Regional Planner from the Maryland Department of State Planning, 50 per cent of the Chief of the Western Maryland Development Office of the Maryland Department of Economic and Community Development, an intern from Frostburg State College, a planning aid (part-time) and secretarial staff (2), will be available to assist the Flood Management Coordinator.

Office Space: Office space will be provided by the Tri-County Council of Western Maryland, Inc.

End Products: End Products will include complete applications for National Flood Insurance for the counties and municipalities of Western Maryland where applicable, maps of floodplain soils, maps of watersheds, grant applications, interpretive materials, improved coordination between local and State agencies, improved understanding at the local level of flood management problems, philosophy and goals.

Work Activities: The Flood Management Coordinator will be meeting with local elected and appointed officials and citizens to explain Flood Management Goals and urge participation in the National Flood Insurance Program. He will assist local counties and municipalities in preparing National Flood Insurance Applications. He will meet with officials of FDCO and other State agencies as appropriate to keep abreast of State and Federal policies, regulations and work programs relating to Flood Management, to include details and applicability of financial assistance for local programs. He will assist local counties and municipalities prepare applications for grants which may be available and prepare interpretive material to further understanding of Flood Management goals, philosophies and grant program requirements.

The Flood Management Coordinator will assist the local level to achieve input to State and Federal programs and plans. He will provide data to State and Federal agencies to assist in their Flood Management efforts and provide a means of representing local viewpoints which may conflict with higher level planning goals.

The Flood Management Coordinator will provide expertise and technical assistance to local counties and municipalities to meet their flood management objectives.

II. Goal and Objectives

To provide local input and expertise to assist the State of Maryland in developing an efficient, coordinated, planning implementation and management program for flood disaster prevention.

Technical Assistance

1. To aid the counties and municipalities of Western Maryland in collecting and developing information necessary to comply with the National Flood Insurance Program.
2. To provide information on existing policies and regulations.
3. To provide information on grant programs available which emphasize comprehensive planning requirements.
4. Respond to specific critical problems needing immediate advice and assistance.

To Provide Coordination Between State and Local Government

1. To provide local input and recommendations concerning the development of state-wide policies and programs related to flood prevention program.
2. Provide A-95 expertise.
3. Capital program assist State and local.

To Provide Information and Education

II. Work Program

Technical Assistance

1. Flood Insurance Program

    a. Collect existing data on flood insurance requirements.
    b. Prepare interpretive information and present to counties and municipalities.
    c. Assist in evaluating local needs in order to qualify counties and municipalities for flood insurance program.
    d. Assist in preparing local surface water runoff plans in relation to the flood insurance program.
    e. Assist in the preparation of applications for the National Flood Insurance Program.
2. Collect and disseminate existing information on current and proposed Federal, State and Local flood management related policies and regulations.
3. Collect and disseminate information relating to grants for flood prevention related programs which would assist in providing funds for storm drainage projects and flood control projects.
4. Provide local expertise to respond to specific critical flood related problems needing immediate advice and assistance.

Coordination Between State and Local Governments

1. To provide local input to state-wide flood prevention planning efforts.
    a. Watershed delineation.
    b. Compile and map floodplain soils data.
    c. Provide local input to floodplain delineation and management program.
2. To provide expertise for review and comment on A-95 review process.
3. Provide assistance relating to long range capital improvements programs at the state and local levels.

Information and Education Relating to Flood Management

1. Prepare informational material relating to philosophy of floodplain management.
2. Prepare informational material relating to available grant programs.
3. Collect, interpret and disseminate information regarding all aspects of flood management.

FLOOD RECOVERY, REHABILITATION AND PREVENTION PROGRAM
TRI-COUNTY COUNCIL FOR WESTERN MARYLAND, INC.

OBJECTIVE		WORK ITEMS	END PRODUCT
1.1	Provide local flood management expertise	Compile and prepare all available information and data needed to enable 3 counties and 24 municipalities to apply for National Flood Insurance Program.	Improved capability to understand and project future flood problems.
.2	Collect & prepare data National Flood Insurance		
.3	Collect copies of Land Use Codes adopted.		Completed applications for National Flood Insurance for 3 counties and 24 municipalities.
.4	Prepare map of region.		
.5	Prepare historical summaries of flooding.	Respond to requests for technical planning assistance to specific local flood prevention planning efforts such as preparation of model slope-density regulations relating to flood and runoff characteristics.	
.6	Prepare maps of counties and municipalities.		Approvals for Flood Insurance Program for as many communities and counties that are deemed eligible.
.7	List municipalities and flood problems.		
.8	Collect population, housing and business data.		
.9	Prepare interpretative information.		
.10	Evaluate local needs.		
.11	Prepare flood insurance applications.		
2	Collect and disseminate flood management policies and regulations relating to flood insurance.		Improved understanding of flood management policies, philosophies and regulations at the local level.
3	Investigate sources of financial aid and dissemi- information		Reports, maps, and technical assistance needed to resolve local

TRI-COUNTY COUNCIL FOR WESTERN MARYLAND, INC. (Cont.)

	OBJECTIVE	WORK ITEMS	END PRODUCT
4	Provide immediate technical assistance for flood related problems.		flood related problems.
5.1	State/Local, Local/State coordination.	To maintain constant contact with all appropriate State agencies and local agencies to assure open cooperative flow of information.	Improved liaison communications and coordination between FDCO, other State agencies and departments and local agencies.
.2	Provide staff assistance to integrate Local/State responses.		
.3	Assist in watershed delineation.		
.4	Assist FDCO in coordination of efforts.	Preparation of maps of watersheds and floodplain soils.	Maps of floodplain soils and delineated watersheds.
.5	Compile & mapping of floodplain soils.		
.6	Provide local input to floodplain delineation.	Collect information on floodplain delineation.	Local impact to DNR flood plain delineation efforts.
6	A-95 expertise	Prepare A-95 reviews re- Prepare A-95 reviews relating to flood protection and prevention.	Local impact to DNR flood plain delineation efforts.
7	Provide assist in CIP at State & local levels.		A-95 Reviews.
8	Work with FDCO & secure financial assistance.		Technical assistance to county and municipal governments on planning and CIP projects. Financial assistance to local government from State and Federal sources.

TRI-COUNTY COUNCIL FOR WESTERN MARYLAND, INC. (Cont.)

	OBJECTIVE	WORK ITEMS	END PRODUCT
9.1	Information & education programming flood management	Arrange for meetings, news releases, and media coverage of flood prevention effort. Prepare materials to assist in explaining philosophy and practice of flood management.	Improved understanding of limitation of building on floodplains; effects of improper conservation practices, land development practices; ordinance and code needs.
.2	Philosophical information flood management.		
10	Prepare informational material on available financial aid.	Prepare information on possible financial aid available and disseminate to local government.	Improved awareness of financial aide available for flood related programs.
11	Collect, interpret & disseminate flood management information.	Advocate implementation of flood management efforts in counties and towns.	

BUDGET

Federal Allocation - ARC - $28,000
No Contributed Services Required

Program Expenditures

Objectives	Duration	Cost
1	18 months	$ 5,250
2	18 months	750
3	18 months	750
4	24 months	5,250
5	24 months	3,500
6	24 months	750
7	24 months	750
8	24 months	2,500
9	24 months	750
10	18 months	750
11	24 months	2,750
TOTAL	24 months	$28,000

MARYLAND
DEPARTMENT OF ECONOMIC
AND
COMMUNITY DEVELOPMENT
PROGRAM

SCOPE OF SERVICES

Department of Economic and Community Development
Long-Range Flood Program

The Department proposes to undertake activities which will assist those jurisdictions within the State which suffered job and income losses from Hurricane Agnes with special emphasis upon helping these jurisdictions to develop long-range economic programs which will yield job and income producing enterprises with a high degree of viability under future natural disasters.

Specifically, the Department will:

1. Contract for the services of three economic development specialists. One will work with the Delmarva Advisory Council serving the Eastern Shore counties of Somerset, Worcester, Wicomico, Dorchester, Caroline, Talbot, Queen Anne's, Kent and Cecil. Another will work with the Tri-County Council for Southern Maryland, serving the counties of Charles, Calvert and St. Mary's. The third will be responsible for other counties which had been adversely affected by Hurricane Agnes but not falling under the purview of the above regional agencies, as well as provide liaison with and assistance to the two field-based economic development specialists.

2. The information generated at the local and district levels, transmitted via the economic development specialists, will be reviewed and evaluated by DECD staff as to its fit with OSEDP objectives. (See attached "O.S.E.D.P. Phasing" for description of O.S.E.D.P. as it relates to local jurisdictons, including those which have been affected by Hurricane Agnes). The information will be made available to those elements of the Department concerned with attracting new industries and developing existing enterprises, primarily the Division of Tourism, and the Division of Business and Industrial Development.

In order to accomplish the above, the work program will include:

1. Develop linkages with local governments, economic development agencies, business and community leaders in a mutual exploration of available natural, physical, and human resources which can be focused toward providing new gainful and permanent employment for their underemployed and unemployed.

2. Develop a knowledge of and communication with pertinent State and Federal agencies whose programs foster and support economic development.

3. Provide information to EDA about the status of grantee programs, projects, and related activities and problems.

4. Provide assurance to EDA that environmental considerations will be incorporated into the Grantee work program consistent with the provisions of the National Environmental Policy Act of 1969.

5. Work toward generating district-wide overall economic development processes as specified in EDA guidelines.

6. Maintain continuous review and evaluation of the proposals and actions of the districts and localities as to their capacity to alleviate persistent underemployment and unemployment of resources, suggesting adjustments where events require a change in strategy.

7. Encourage private and public leadership to carry on a continuing development process.

8. Coordinate the efforts of participating instrumentalities and provide liaison with the State.

The proposed 18 month budget calls for total funding of $118,000.

Professional Staff	$ 90,000
Travel	13,000
Communication	1,500
Printing and Publication	2,100
Supplies	1,500
Department Overhead & Fringe Benefits	9,900
	$118,000

O.S.E.D.P. - PHASING

Phase I - Getting Ready

1. Identify local leaders for initial contacts.

2. Assist local leaders in developing local institutional arrangements for conducting OSEDP operations in their areas. Form a new group or identify an existing group for State/local liaison.

3. Invite local and State agencies' input into an information package.

4. Obtain DECD Division inputs into an information package. This is to include any appropriate input from consultants.

5. Assemble information package by counties and by regions. During Phase I we will concentrate on delivery of information to local leaders and will not attempt to present a prescription for change. Where trends and alternatives have been perceived these will be available for discussion.

6. Schedule meetings with local leaders for DECD presentation of Phase I OSEDP package.

7. Phase I in each area will end with above presentation which will include:

    a. What OSEDP is and how it works.
    b. The information package and how it can be used.
    c. A suggested agenda for Phase II (see below).
    d. A proposed target date for completion of Phase II.

Phase II - Analysis and Planning

1. Local leaders and appropriate institutions study the Phase i information package with interpretive assistance from DECD as needed.

2. Using DECD assistance, locals reach agreements among themselves and with the State on identification of problems and opportunities for developing desirable conditions.

This may involve a series of meetings and other State/local contacts toward the development of a joint strategy.

3. DECD and locals collaborate on preparation of an Economic Development Action strategy with agenda for Phase II for their areas. This becomes a chapter in the OSEDP. In most areas this will involve a heavy DECD work load.

4. A State/local meeting for review of above launches Phase III. (See below)

Phase III - Implementation and Refinement of Plans

1. Locals proceed with developing projects and programs prescribed in Phase II using DECD assistance as needed.

2. DECD and locals seek ways to refine and improve the local development process.

3. When appropriate, reevaluate and update OSEDP procedures and inputs into the State/local development process. Refine and revise process as needed.

MARYLAND DEPARTMENT OF NATURAL RESOURCES PROGRAM

Scope Of Services Of

ROY F. WESTON, INC.

Consultant

SCOPE OF SERVICES

Department of Natural Resources
Water Resources Administration
(Program Proposal for Federal
Emergency Disaster Assistance)

The Department of Natural Resources will receive $60,000 in Federal grants for its emergency disaster assistance proposal. Of this amount, $20,000 will come from the Department of Housing and Urban Development, $30,000 from the Economic Development Administration, and $10,000 from the Appalachian Regional Commission.

The primary work elements will be conducted by Roy F. Weston, Inc. chosen by the Department of Natural Resources with concurrence from the Department of State Planning and the Federal funding agencies.

The contract will be administered by DNR who will provide coordination and support services to Roy F. Weston, Inc. in their performing of the primary work elements.

Program Elements

1. Roy F. Weston, Inc. will examine Department of Natural Resources activities incident to flood emergencies. This will include a management and assistance plan to provide for an efficient response by the Department and its supporting agencies. Duties and responsibilities of other departments and agencies will be examined in this task and a coordination plan with these entities will be formulated. Areas of study will include, but not be limited to:

    a. Development of framework for assessing emergency situations such as dam failure and other structural deterioration brought about by flood waters.
    b. Examination of U.S. Weather Service functions as related to early storm warnings and flood forecastings.
    c. Coordination of evacuation procedures with Federal, State and particularly local agencies.

2. Roy F. Weston, Inc. will review existing regulations and enforcement practices pursuant to Article 96A, Section 12 of the Annotated Code of Maryland to:

a. Assure no property within the scope of the law will be developed in such a manner as to create new damageable property.
b. Assure no dam will be built which will create an undue hazard to downstream life or porperty.
c. Assure no other waterway obstruction or floodplain encroachment will create an additional flood hazard to other properties or adversely affect existing stream channel geometry.
d. Review the fifty-year flood restriction in light of Federal policies and their use of the one hundred-year flood.

3. Roy F. Weston, Inc. will prepare a storm drainage manual to function as a recommended procedure for the design of drainage systems. The manual will serve to enable proper control of runoff due to changing watershed characteristics brought about by development. Information evolving from the ongoing Anacostia Study will be utilized by Roy F. Weston, Inc. It is felt by planners and engineers that a manual of procedure is needed now to regulate ongoing harmful development practices.

4. Coordination

The Water Resources Administration will make available to Roy F. Weston, Inc. names and addresses of known sources of information. It is anticipated that Roy F. Weston, Inc. will be in contact with local county and municipal agencies, Maryland Civil Defense Agency, Maryland Geological Survey, State Highway Administration, Maryland Department of State Planning, U.S. Corps of Engineers, U.S. Soil Conservation Service, U.S. Weather Service, National Aeronautic and Space Administration, U.S. Geological Survey, and the Department of Housing and Urban Development.

Coordination between Roy F. Weston, Inc. and the Water Resources Administration will be through conference as needed. On some tasks, there will be an agreed to division of labor between Roy F. Weston, Inc. and the Administration. On other tasks, the Administration will simply assume a review role.

Coordination with the sponsoring Federal Agencies will be through the Flood Disaster Coordination Office, Department of State Planning.

Reports

Roy F. Weston, Inc. will produce the following reports and documents:

1. A report which will outline the recommended role of the Department of Natural Resources before, during and after natural disasters.
2. A draft of recommended regulations pursuant to Article 96A, Section 12 along with a report containing supporting information and bibliography.
3. A draft storm water management design manual along with supporting information.
4. Copies of pertinent correspondence.

The Water Resources Administration will be responsible for any required progress reports. Reproduction in volume of the various reports will be the responsibility of the Administration.

BUDGET

TASK	CONDUCTED BY	DURATION (MAN MONTHS)	COST	SOURCE
1	Consultant	12	$14,850	Federal
2	Consultant	12	$ 6,500	Federal
3	Consultant	12	$36,650	Federal
4	DNR	12	$11,850	Federal ($1,150) State ($10,000 - In-Kind Services)

Federal Allocation	-	HUD -	$20,000
		EDA -	30,000
		ARC -	10,000
Contributed Services Required	-		10,000
Total Program Cost	-		$70,000

Program Expenditures

Consultant Services	-	$59,850
DNR Services	-	10,000
HUD Project Inspection Fee	-	150
		$70,000

SUSQUEHANNA RIVER BASIN COMMISSION PROGRAM

SCOPE OF SERVICES

Susquehanna River Basin Commission

During the Agnes Flood a number of cities along the Susquehanna River Basin were adversley affected. Many of them applied for HUD Federal Flood Insurance. HUD determined it would be most efficient to subsidize a general mapping study of the impacted area. It was decided that the Susquehanna River Basin Commission (SRBC) would administer the contract, and that HUD would contribute funds along with the impacted states of New York, Pennsylvania and Maryland.

The total cost of the study will be around $1,000,000 of which over $600,000 will be spent in Pennsylvania, over $200,000 in New York and approximately $22,000 in Maryland. HUD will pay $16,000 of Maryland's $22,000 study. The State of Maryland must pay the balance of $6,000. EDA is funding the state's portion of the Maryland cost ($6,000).

The objectives, work items and end products are identified in the attached proposal from SRBC to the Department of Housing and Urban Development's Flood Insurance Administration. SRBC has suggested and we concurred that the entire town of Perryville and the City of Havre de Grace be included in the study if at all possible. Only portions of these areas lie within the Susquehanna River Basin and, therefore, under the authority of the Susquehanna River Basin Commission.

Maryland's segment of the study will include Port Deposit, Havre de Grace, Perryville and Susquehanna State Park. The Department of Natural Resources, Harford County, Cecil County, Department of State Planning and other interested agencies will cooperate to best utilize the information obtained from this study.

PART I. TECHNICAL PROPOSAL

Section 1: Proposal Coverage

A. Scope of Work

The Susquehanna River Basin Commission herinafter referred to as the Contractor shall furnish the necessary professional and technical personnel, clerical services, materials, equipment and facilities needed to conduct a Flood Plain Information Study, within the Susquehanna River Basin area for the Project Area. The flood hazard areas to be delineated will include all areas affected by the tributary stream and the Susquehanna River, within the Project Area. The Contractor shall conduct the work in accordance with the provisions furnished by the official representative of the Maryland Department of State Planning.

B. General Objectives

To generate basic information to assist the Maryland Department of State Planning in making flood insurance, under the regular program, available through the Susquehanna River Basin area; to provide information needed for orderly rebuilding of the area badly damaged by the tropical storm Agnes. Also, to generate the necessary general information, hydrological data, delineation of floodways, flood elevations, and final maps needed to delineate the areas having flood hazards within the Project Area.

Section 2: Tasks and Methods

A. Principal Tasks to be Undertaken

The Contractor shall perform the following specific tasks for the Project Area:

Task 1 - Water Surface Profile

For the project area listed in Attachment A, determine and plot the water surface profiles for the Susquehanna River and Octoraro Creek showing the

10, 50, 100 and 500 year frequency flood profiles in accordance with standard engineering practices.

Task 2 - Delineation of Flood Lines for Flood Reach
Using the profiles prepared in Task 1, delineate the outline of the 100 year and 500 year flood plains on 1"=800' scale, 5' contour topographic maps for designated flood reaches. These reach maps will encompass the Project Area.

Task 3 - Delineation of Floodway
Determine the floodway required to convey the 100 year frequency flood discharge with a maximum increase in the flood stage of 1'. Delineate the floodway assuming equal conveyance reduction on either side of the stream where practical. Where not practical, delineate the floodway in the most practical manner in the Contractor's judgement. This data shall be included on the maps prepared in Task 2.

Task 4 - Reference Marks
Ground control established in the preparation of the base maps will be tabulated and provided to the Maryland Department of State Planning. Additional existing benchmarks, where readily available, will also be tabulated in order to provide communities and individuals the means to determine first floor elevations in relation to the 100 year flood. These tabulations will be on a Project Area basis, will include a narrative description of the benchmarks, will be in reference to mean sea level datum of 1929 and will be located on the flood plain maps described in Task 3.

Task 5 - Reports
Progress Reports and Completion Report
The Contractor shall prepare and submit to the Planning Agency two (2) copies of a progress report indicating the percentage of work completed, together with supporting narrative statements describing significant developments and other pertinent matters relevant to the undertaking of the Project. Such report shall be submitted within a week from the end of the first six (6) months after execution of the contract.

The Contractor shall prepare and submit to the Planning Agency two (2) copies of a completion report indicating the work accomplished during the contract period keyed to the specific work items listed in the Contract Scope of Services. Such report shall be submitted within a week from the end of the contract time period.

Profiles and Floodway Data

The Contractor shall submit two (2) draft copies of the profiles and floodway data prepared under Tasks 1 and 3 to the Maryland Department of State Planning for approval accompanying the maps. After receiving comments from the Maryland Department of State Planning, the Contractor shall make appropriate changes where necessary according to the limits of the contract and deliver fifteen (15) copies of each to the Maryland Department of State Planning within 15 days of receipt of the comments. Reports and maps will be submitted for the Project Area.

Maps and other data will be submitted in a report form (including a brief narrative describing the study) suitable for state and county agency use. These reports will cover the Project Area.

B. Consideration for Selecting, Performing and Item Sequencing of Tasks

The Contractor will prepare a priority list of the major tasks in Section 2A, in chronological order, to produce the requisite data needed to complete the progressive phases of the project.

C. Method of Project Control and Management to Ensure Timely Professional and Quality Performance and Plans for Project Management

The Contractor will establish a financial, material, and production review procedure of the activities of all responsible parties to assure timely performance as outlined in the PERT Chart. (Attachment B).

These review procedures will provide the information needed to make a monthly progress report and invoices by the Contractor to the Maryland Department of State Planning as well as the reports described in Task 5 of Section 2A of this proposal.

Financial Review

The Contractor will require the photogrammetric mapping subcontractor to submit monthly progress reports and invoices. Progress reports coupled with the expected monthly billing from the subcontractor and material review procedures will provide an adequate check and counter-check procedure to assure accuracy of all reports.

Material Review

(1) Photogrammetric Mapping - The subcontractor will be required to submit photographic indexes as the new aerial photography is completed to show areas which have been photographed. This will ensure that all areas to be covered have been photographed before further work is done.

D. Subcontractors

Proposed Arrangements

Supplies and Services Called for:

The flood profiles and floodway maps required under this contract will be completed by the Contractor. Basic mapping, surveying and cross sectioning is to be done by a consulting subcontractor specializing in aerial photography interpretation and stereoptic map compilation. Maps will be prepared at a scale of 1"=200' with 5' contour intervals. Cross sections will be plotted while the new aerial photographs are still under the stereo plotting machines and recorded on computer cards with vertical accuracy to 1-1/4'.

ATTACHMENT A

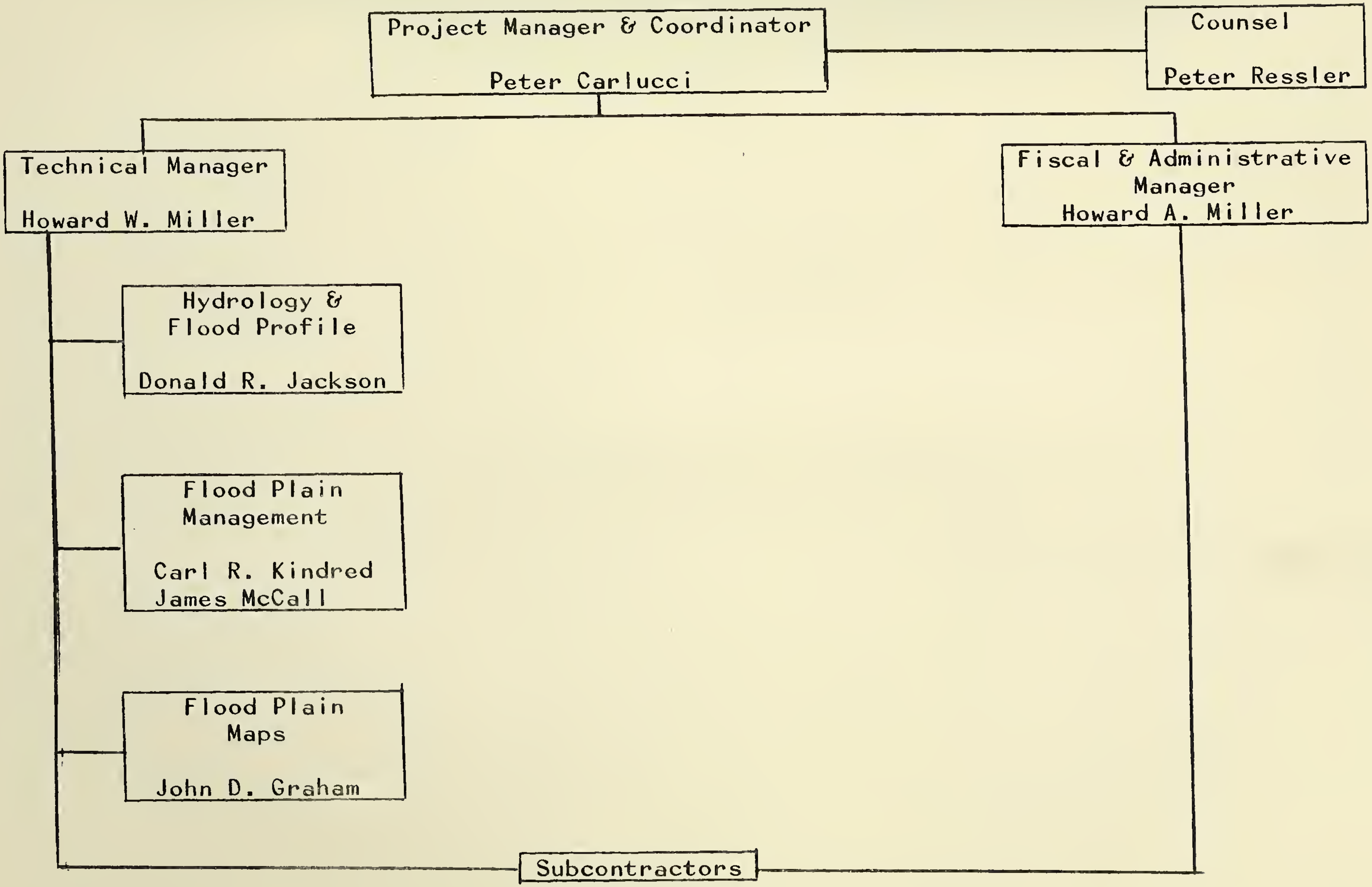
Project Area for Hydraulic Determination and Floodway Delineation

This project area will include the floodplains of a section of the Susquehanna River from approximately the mouth of Deer Creek upstream to the Conowingo Dam, and a section of the Octoraro Creek beginning at its confluence with the Susquehanna River. This will include approximately a 2.56 mile length of the Susquehanna River and approximately a 1.04 mile length of Octoraro Creek.

These flood plain areas are located in unincorporated areas of Harford and Cecil Counties.

This project area is an upstream extension of the Port Deposit-Havre de Grace project area included in the HUD-SRBC Flood Insurance Study Contract.

ORGANIZATIONAL CHART FOR PROJECT



PERT CHART

JOB		MONTH														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Mapping	Aerial Photography					XXX										OVERALL PROJECT REVIEW
	Locate Cross Sections	XXX XXX														
	Develop Stream Bottom Profile Data					XXXX	XXX									
	Develop Maps-1"=200'						XXX	XXXX	XXXX							
	Computerize Cross-Sections						XXX	XXXX	XXXX							
Flood Profile Determinations	Estimate "n" values		XXXX	XXX	XXXX											
	Determine flood discharge		XXXX	XXX	XXXX											
	Trial 100-Yr. Disc.									XXXXX						
	Revise "n" values										XXXXX					
	Determine 500, 100, 50, 10 Yr. Flood Profiles										XXXXX	XXXX	XXXXX			
	Trial Floodway Determination												XXXXX			
	Final Floodway Determination												XXXXX			

PERT CHART (CONT.)

JOB		MONTH														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Flood Hazard Determination & Reach Maps	Plan & Profile for Reaches of 500 Yr. Floods and Floodway (Profiles of 500, 100, 50 & 10 Yr. Floods)													XXXXX	XXXXX	OVERALL PROJECT REVIEW
Narrative Reports	Develop Flood History													XXXXX	XXXXX	
	Develop Benchmark Data													XXXXX	XXXXX	
	Develop Overall Report													XXXXX	XXXXX	

MARYLAND DEPARTMENT OF STATE PLANNING PROGRAM

COMPREHENSIVE PLANNING DIVISION

SCOPE OF SERVICES

Comprehensive State Planning Division
Department of State Planning

An Interpretive Soils and Surface Base to Predict Watershed Response to Runoff

I. Background

Many decisions have been made and activities subsequently undertaken to repair and restore those areas damaged by Hurricane Agnes. Unfortunately, much of the Agnes planning effort and many proposals now being implemented are being done without the benefit of a quality data base upon which to make decisions.

A large collection of land use, storm impact, and geophysical information exists. However, there is no consistency in the format of the data nor is there centralized information base in a form which combines in a practical manner all of the data that can be used for planning purposes.

The studies done by G. Angus Hills, Phillip H. Lewis, Jr. and Ian L. McHarg are illustrative of the feasibility of developing techniques and information bases which provide more comprehensive and environmentally responsive planning data.

Inattention to management of the floodplain has resulted in flooding of established communities (which had never flooded before), the continued development within naturally defined floodplains, the loss of valuable soils, their consequent clogging of streams and lakes, and resultant higher levels of eutrophication. When manipulated properly, surface runoff information would allow the assessment and prediction of runoff as it relates to urban growth and land use changes in previously undeveloped portions of watersheds. In addition, surficial data can be accumulated by erosion potential, location of erodable soils, and sediment loads in associated drainage systems. Simply stated, in the past, land use changes in general have occurred without necessary attention given to surficial impacts (i.e., change in permeability, exposure of erodible soils, etc.). There is now an increased awareness of flood-erosion-sedimentation consequences of poorly planned growth and development and the availability of the surficial data

would be more readily accepted or assimilated into ongoing planning and development activities. For example, existing soil information can be utilized as a planning tool to identify alluvial soils deposited by flood waters. Thus floodways would be identified which in turn can be compared to computed water surface elevations. The Department of Natural Resources is presently working with existing and experimental models to forecast flood levels and sediment transport. Use of this developing capability coordinated with the use of soil information will provide the dependable data upon which to base floodplain management systems now being formulated.

II. Program Description

Soil data will be analyzed using a uniform statewide set of variables bringing surficial data into consistency.

The effort will not involve the collection of new data, but rely on existing sources of hydrological and surficial data resulting from the recent Soil Conservation Service soil survey. These sources have been reviewed and are of sufficient detail and accuracy, and of a quality that is appropriate for this proposal, for the entire State excepting Allegany and Saint Mary's Counties. Historic soils information (USDA) will be utilized to supplement the more recent surveys in Allegany and Saint Mary's Counties.

Drs. Matthews and R. Shields with the Department of State Planning have developed a Natural Soil Groupings system for the State which includes slope phase information. The Natural Soil Groupings system has been designed to respon to planning interpretations. The interpretative capabilities of the Natural Soil Groupings will at a minimum identify the following relationships: (1) frequency of flooding (alluvial soils); (2) permeability (seepage, infiltration, percolation); (3) fertility; (4) depth to bedrock and stoniness; and (5) stability and erodibility. These associations will identify existing or potential trouble areas.

The Land Use Inventory of Maryland, developed by the Department of State Planning, under a NASA demonstration project will be utilized to identify the existing location and extent of impervious surfaces, as well as a source for runoff coefficients analyses for less intensively developed areas. The inventory is already complete for the three westernmost coun-

ties in the State and it is expected that by March 31, 1973, the remainder of the State will be complete.

Th The data accumulated will be capable of manipulation into interpretative tables and eventual mechanical or electronic processing. This will be in addition to the production and distribution of detailed interpretative maps to guide planning and development.

Slope maps will be compiled from two different sources. State Highway Administration mapping of 0-3%, 3-8% and above exists for 15 of the 23 Maryland Counties. The second source is the extraction of slope phase information in the SCS soil surveys. A composite of these two sources will be created using a cellular computer system, developed by the Department of State Planning for use in the preparation of a State Generalized Land Use Plan.

The development of the surficial state-wide data base would place into the hands of those currently working on flood relief measures and flood prevention planning a source of invaluable information. Also the use of this information in studying the impact of new development on watersheds will be explained.

For example: soil permeability relates directly to the ability for onsite sewage disposal systems to function adequately; fertility relates to the ability of agriculture and plant growth to grow; alluvial soils delineate the area of soil deposition from flood waters thus the floodway. All of the relationships can be used to evaluate the responses of a particular area to flooding. A more fertile soil has greater plant cover, therefore, not only is it not subject to severe erosion in most cases but it also catches water in the root systems. Erodibility is a function of soil texture, vegetation and slope.

III. Program Objectives

A. To develop a data base utilizing soils and surface information to predict the response of the watershed surface to runoff.

B. To develop a usable guide for interpreting detailed data in a short period of time.

C. Properly guide state and local planning efforts through an efficient method of investigating sites for industrial, commercial and residential developments.

D. To utilize existing soils information to minimize land use preparation costs and time.

E. To utilize existing data manipulation techniques and interpretive skills presently available within state and federal agencies.

F. To have mosaics, interpretive charts and manuals completed and available for wide distribution on or before August 30, 1973.

IV. Work Elements

A. Acquire non-mosaic base generalized soil maps of Maryland- Non-mosaic soil survey sheets will be obtained from the Soil Conservation Service in varying forms, and brought into internal consistency (i.e., scale).
Mosaic generalized soil map sheets by county -
Since the soil maps are not produced on stable paper some care will have to be exercised in assembly the maps sheets. However, these deficiencies in the accuracy of the base will be negligible due to the eventual reduction of the maps by a factor of four.
Delineate soils by natural soil category displaying permeability susceptibility to erosion, fertility, etc. This process will be done by hand on the original mosaiced sheets for each county. An interpretive chart will be developed for use on the assembled maps for converting the USDA-SCS soils associations to the appropriate Natural Soil Groupings described earlier. Most of this work will be performed by American Data Map, Inc., a minority Indian enterprise based in McLean, Virginia.

B. Photographically reduce and reproduce the completed modified county maps.
The corrected mosaiced original sheets are printed at a scale of 1:15,840. Once they are assembled into sheets, they will be photographed in whole or part depending upon the county. Reproducible photo positives and negatives will be made at a scale of 1:63,360.
Working prints on a stable base will be produced. This

activity will be done by the Soil Conservation Service on a piecemeal basis by subdivision.

C. Compile generalized land use inventory from existing sources and superimpose developed areas onto soil maps. The generalized land use inventory (map) will be compiled from several sources. Photomosaics from the USDA at 1:63,360 and USGS at 1:72,000 will be used in combination with 70 MM color-infrared photography at approximately 1:450,000 from the NASA-ERTS-1 satellite. The land use classification scheme used was developed by Anderson, Hardy and Roach-USGS Circular G71. This work will be done by Environmental Science Research Institute, Riverside, California.

D. Prepare cartiographic displays of surficial data. All cartiograhic displays will be developed from the basic photo reduction of the original mosaiced maps in combination with overlays produced to highlight certain characteristics and computer printouts of slope. Black and white as well as color reproduction work will be utilized. This will be done by new personnel and existing staff.

E. Prepare interpretive manual for the utilization of surficial data in determining impact of various changes in watershed surface character. The manual will assist in interpreting the cartiographic displays, the tabular data and the modeling information. The manual will be broken into separate sections for each of the above purposes, and distributed to state and local governments. This will be done by new personnel and existing staff.

V. Overall Program Design (See next page).

COMPREHENSIVE STATE PLANNING DIVISION
DEPARTMENT OF STATE PLANNING

An Interpretive Soils and Surface Data Base to Predict Watershed Response to Runoff

WORK ELEMENT	ACTIVITY SCHEDULE (1973)	MANPOWER	COST BREAKDOWN			
			EDA	ARC	DSP	TOTAL
A. Mosaic soil maps by county Delineate soils by category	3/1 - 5/15	Contract-American Data Maps, Inc.	$ 3,165	$2,000	$2,835	$ 8,000
B. Reduce and reproduce	3/1 - 5/15	Contract- Soil Conservation Service	$ 2,300			2,300
C. Compile land use and superimpose on soil maps	5/1 - 5/30	Contract-Environmental Science Research Institute	5,000			5,000
D. Prepare cartographic displays	5/15 - 7/30	30 Mandays @$33.33			1,000	1,000
E. Prepare manual	7/1 - 8/30	10 Mandays @$53.50	535			535
		TOTAL COST	$11,000	$2,000	$3,835	$16,835

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